PB-227 340

PROJECTS OF THE AGRICULTURAL AND MARINE POLLUTION CONTROL SECTION

Kurt Jakobson, et al

Environmental Protection Agency
Washington, D.C.

March 1973

DISTRIBUTED BY:

NTIS
National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

008239

PB 227 340

EPA-R2-73-171
MARCH 1973

Environmental Protection Technology Series

E.P1.23/2:
73-171

Projects of the Agricultural and Marine Pollution Control Section
March 1973

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U S Department of Commerce
Springfield VA 22151

Office of Research and Monitoring
U.S. Environmental Protection Agency
Washington, D.C. 20460

R

RESEARCH REPORTING SERIES

Research reports of the Office of Research and Monitoring, Environmental Protection Agency, have been grouped into five series. These five broad categories were established to facilitate further development and application of environmental technology. Elimination of traditional grouping was consciously planned to foster technology transfer and a maximum interface in related fields. The five series are:

1. Environmental Health Effects Research
2. Environmental Protection Technology
3. Ecological Research
4. Environmental Monitoring
5. Socioeconomic Environmental Studies

This report has been assigned to the ENVIRONMENTAL PROTECTION TECHNOLOGY series. This series describes research performed to develop and demonstrate instrumentation, equipment and methodology to repair or prevent environmental degradation from point and non-point sources of pollution. This work provides the new or improved technology required for the control and treatment of pollution sources to meet environmental quality standards.

EPA-R2-73-171
March, 1973

PROJECTS OF THE AGRICULTURAL AND MARINE POLLUTION CONTROL SECTION

Kurt Jakobson, Chief

William J. Lacy, Chief
Applied Science and Technology Branch
Office of Research and Monitoring
Environmental Protection Agency
Washington, D. C. 20460

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
Price $2.60 domestic postpaid or $2.25 GPO Bookstore

→ The report

ABSTRACT

Projects of the Agricultural and Marine Pollution Control Program - March 1973 is a compilation of the information sheets of the 160 projects initiated from fiscal year 1968 through fiscal year 1972. Each sheet contains the objectives, statistical information and a brief description of an initiated project. → P 1

General introductory information on the Environmental Protection Agency's Agricultural and Marine Pollution Control Program is also presented to provide perspective on the magnitude of these non-point pollution problems and the research direction that must be pursued in order to develop the technology to adequately control non-point sources in the United States.

TABLE OF CONTENTS

PAGE

INTRODUCTION 1

PUBLISHED REPORTS 3

AGRICULTURAL SOURCES INFORMATION SHEETS 11
  FORESTRY AND LOGGING 15
  AGRICULTURAL RUNOFF 19
  IRRIGATION RETURN FLOWS 35
  ANIMAL FEEDLOTS 49

TRANSPORTATION SOURCES INFORMATION SHEETS 81
  RECREATION 83
  WATERCRAFT WASTES 89

OIL & HAZARDOUS MATERIAL SPILLS INFORMATION SHEETS 113
  OIL SPILLS 115
  HAZARDOUS MATERIAL SPILLS 177

ACKNOWLEDGEMENTS 199

Preceding page blank

INTRODUCTION

The purpose of this ~~booklet~~ report is to provide a listing of all active and completed research, development and demonstration projects funded by the Environmental Protection Agency and its predecessor agencies through the Office of Research and Monitoring, Technology Division, Applied Science and Technology Branch, and under the management and technical direction of the Agriculture and Marine Pollution Control Section. The information reported for each project includes the most commonly requested specific information such as the title of the project, the name of the contractor or grantee, and financial data along with a brief description of the project. Projects are divided into program element groups and are listed in numerical order using the project numbering system in use at the time of project initiation.

Projects under the direction of the Agriculture and Marine Pollution Control Section initiated prior to October, 1972 were funded under Section 5 and 6 of the Federal Pollution Control Act, as amended. Projects initiated since the passage of the 1972 amendments were funded under the authority granted the Administration by Section 104. Section 104 of the Act provides broad authorization for research, development and demonstration activities to prevent and abate pollution. It puts particular emphasis on the development of techniques to abate pollution from non-point sources, such as agricultural sources.

The projects under the direction of the Agriculture and Marine Pollution Control Section include a wide and diverse technological area. A description of the objectives of each program element is given at the beginning of each section of this booklet. Our general objectives are to develop techniques for the control and abatement of the pollution problems caused by the accidential spills of oil and hazardous materials, the operation of watercraft and recreational facilities, and from all agricultural sources. The techniques developed are carried through the demonstration phase so that the information may be used by States, industry and private citizens. Although this effort involve some "research", most of the work done by grantees and contractors is of a practical nature directly related to the solution of immediate problems.

For further information concerning any of the projects in this booklet, please contact the Chief, Agriculture and Marine Pollution Control Section, Office of Research and Monitoring, Environmental Protection Agency, Washington, D. C. 20460.

PUBLISHED REPORTS

AGRICULTURAL POLLUTION CONTROL

1301 - Forestry and Logging

Report Number	Title/Author	Source
13010---02/70	Industrial Waste Guide on Logging Practices; by Northwest Region, FWPCA, Portland, OR	NTIS - PB 207 644
13010EGA02/71	Studies on Effects of Watershed Practices on Streams; by Oregon State Univ., Corvallis, Oregon	GPO - $1.50
EPA-R2-72-016	Forest Fertilization - A State of the Art Review and Description of Environmental Effects; by W. A. Groman, NERC, EPA, Corvallis, OR	GPO - 65¢

1302 - Agricultural Run-Off

Report Number	Title/Author	Source
13020---07/71	Agricultural Pollution of the Great Lakes Basin; by Governments of the United States and Canada	GPO - $1.50 NTIS - PB 206 906
13020DGX08/71	Role of Animal Wastes in Agricultural Land Runoff; by School of Agricultural and Life Sciences, North Carolina State Univ., Raleigh, North Carolina	GPO - $1.25 NTIS - PB 209 213
13020DPB08/71	Management of Nutrients on Agricultural Land for Improved Water Quality; by Dept. of Agronomy, College of Agriculture and Life Science, Cornell Univ., Ithaca, NY	GPO - $1.25 NTIS - PB 209 858

1303 - Irrigation Return Flows

Report Number	Title/Author	Source
13030---05/69	Characteristics and Pollution Problems of Irrigation Return Flow; by Utah State Univ. Foundation, Logan, Utah	NTIS - PB 204 817
13030---11/71	Research Needs for Irrigation Return Flow Quality Control; by Gaylord V. Skogerboe, Colorado State Univ., Ft. Collins, CO and J. P. Law, Robert S. Kerr Water Research Center, EPA, Ada, Oklahoma	GPO - $1.00
13030DYY06/69	Water Quality Management Problems in Arid Regions; by Robert S. Kerr Water Research Center, FWQA, Ada, Oklahoma	NTIS - PB 198 125

Preceding page blank

Report Number	Title/Author	Source
13030ELY12/69	Collected Papers Regarding Nitrates in Agricultural Waste Waters; by FWQA, San Francisco, CA; U. S. Bureau of Reclamation; and California Dept. of Water Resources	GPO - $1.50 NTIS - PB 197 595
13030ELY04/71-7	Removal of Nitrate by an Algal System; by California Dept. of Water Resources, San Joaquin Valley, California	GPO - $1.25 NTIS - PB 205 425
13030ELY04/71-8	Denitrification by Anaerobic Filters and Ponds; by Robert S. Kerr Water Research Center, EPA, Ada, Oklahoma	GPO - 75¢
13030ELY05/71-3	Nutrients from Tile Drainage Systems; by California Department of Water Resources	GPO - $1.00
13030ELY05/71-6	Removal of Nitrogen from Tile Drainage - A Summary Report; by California Department of Water Resources and EPA	GPO - 50¢
13030ELY06/71-10	Techniques to Reduce Nitrogen in Drainage Effluent During Transport; by U. S. Bureau of Reclamation, Region 2	GPO - 60¢
13030GJS12/71	National Irrigation Return Flow Research and Development Program; by J. P. Law, Jr., Robert S. Kerr Water Research Center, EPA, Ada, Oklahoma	GPO - 40¢ NTIS - PB 209 857
EPA-R2-72-047 13030 DOA	Evaluation of Canal Lining for Salinity Control in Grand Valley; by G. V. Skogerboe and W. R. Walker Colorado State Univ., Fort Collins, CO	GPO - $2.75
13030ELY08/71-9	The Effects of Agricultural Waste Water Treatment on Algal Bioassay Response; by EPA, Bureau of Reclamation, and California Department of Water Resources	GPO - $1.00
13030ELY05/72-11	Possibility of Reducing Nitrogen in Drainage Water by On-Farm Practices;(Bio-Engineering Aspects of Agricultural Drainage, San Joaquin Valley, California); by United States Bureau of Reclamation, Region II	(Under Review)

Report Number	Title/Author	Source
13030ELY05/71-12	Desalination of Agricultural Tile Drainage; by Robert S. Kerr Water Research Center, EPA; Bureau of Reclamation; and California Department of Water Resources	GPO - $1.00
13030ELY06/71-14	Denitrification by Anaerobic Filters and Ponds - Phase II; by Robert S. Kerr Water Research Center, EPA; Bureau of Reclamation; and California Department of Water Resources	GPO - $1.00
EPA-R2-72-094 13030 FVN	Selected Irrigation Return Flow Quality Abstracts 1968-1969; by G. V. Skogerboe, V. T. Sahni and W. R. Walker, Colorado State Univ., Fort Collins, CO	GPO - $2.75
1304 - Animal Feed Lots		
13040---07/68	Pollution Implications of Animal Wastes - A Forward Oriented Review; by Dr. Raymond C. Loehr, Cornell Univ., Ithaca, New York	NTIS - PB 204 818
13040DEM01/71	Characteristics of Wastes from Southwestern Cattle Feedlots; by Texas Tech. Univ., Lubbock, Texas	GPO - $1.00
13040DKP06/71	Closed System Waste Management for Livestock; by Dr. P. O. Ngoddy, J. P. Harper, R. K. Collins, G. D. Wells, and F. A. Heidar, Michigan State Univ., East Lansing, Michigan	GPO - $1.25
13040EYX11/69	Agricultural Practices and Water Quality; by Iowa State Univ., Ames, Iowa	NTIS - PB 199 828
13040FXG11/71	Evaluation of Beef Cattle Feedlot Waste Management Alternatives; by A. F. Butchbaker, J. E. Garton, G. W. A. Mahoney, and M. D. Paine, Oklahoma State University, Stillwater, Oklahoma	GPO - $2.50
EPA-R2-72-061 13040 FHP	Characteristics of Rainfall Runoff From A Beef Cattle Feedlot; by R. D. Kreis, M. R. Scalf and J. F. McNabb, Robert S. Kerr Water Research Center, EPA, Ada, OK	GPO - $1.00
EPA-R2-72-101 13040 FUU	Bibliography of Livestock Waste Management; by J. R. Miner, D. Bundy and G. Christenbury, Iowa State Univ., Ames, IA	GPO - $2.00

TRANSPORTATION SOURCES CONTROL

1501 - Recreation

Report Number	Title/Author	Source
15010---01/69	Basic Waste Characteristics at Winter Recreation Areas; by B. D. Clark, Pacific Northwest Laboratory, FWPCA, Corvallis, OR	NTIS - PB 208 437
15010---03/70	Working Paper No. 68 - Evaluation of Extended Aeration Treatment at Recreation Areas; by B. D. Clark, Pacific Northwest Laboratory, FWPCA, Corvallis, Oregon	NTIS - PB 208 436

1502 - Watercraft Wastes

Report Number	Title/Author	Source
15020---06/67	Houseboat Wastes: Methods for Collection and Treatment; by B. D. Clark, Pacific Northwest Water Laboratory, FWPCA, Corvallis, Oregon	NTIS - PB 208 439
15020---04/68	Houseboat Waste Characteristics and Treatment; by B. D. Clark, Pacific Northwest Water Laboratory, FWPCA, Corvallis, Oregon	NTIS - PB 208 438
15020DGR08/70	Flexible Holding Tank for Pleasurecraft Sanitary System; by Uniroyal, Inc., Wayne, New Jersey	GPO - 55¢ NTIS - PB 201 700
15020DHB04/70	Storage of Wastes from Watercraft and Disposal at Shore Facilities; by General Dynamics Electric Boat Div., Groton, CT	GPO - $1.00
15020DHE09/69	Collection, Underwater Storage, and Disposal of Pleasurecraft Wastes; by Underwater Storage, Inc., and Silver Schwartz, Ltd., Washington, D. C.	NTIS - PB 188 505
15020DHG09/71	Watercraft Waste Treatment System Development and Demonstration Report; by General Electric Company, Philadelphia, PA	GPO - $1.25 NTIS - PB 208 345
15020ENN09/71	Control of Pollution from Outboard Engine Exhaust: A Reconnaissance Study; by Rensselaer Polytechnic Institute, Troy, NY	GPO - 50¢ NTIS - PB 206 192

OIL AND HAZARDOUS MATERIALS SPILL CONTROL

1508 - Oil Spills

Report Number	Title/Author	Source
15080---03/69	Chemical Treatment of Oil Slicks; by Edison Water Quality Lab., FWQA, Edison, New Jersey	NTIS - PB 185 947
15080---10/70	Oil Containment Systems; by Edison Water Quality Lab., FWQA, Edison, New Jersey	NTIS - PB 206 797
15080DB003/71	Conversion of Crankcase Waste Oil into Useful Products; by National Oil Recovery Corporation, Bayonne, New Jersey	GPO - $1.00 NTIS - PB 205 207
15080DJM07/70	Recovery of Oil Spills Using Vortex Assisted Airlift System; by Battelle Memorial Institute, Richland, Washington	GPO - 50¢
15080DJN01/71	Gelling Crude Oils to Reduce Marine Pollution From Tanker Oil Spills; by Western Co. of North America, Richardson, Texas	GPO - $1.25 NTIS - PB 202 239
15080DJ010/69	Oil Tagging System Study - Summary; by Melpar, Inc., Arlington, Virginia	NTIS - PB 190 193
15080DJ005/70	Oil Tagging System Study - Final Report; by Melpar, Inc., Arlington, Virginia	GPO - $1.50 NTIS - PB 195 283
15080DJP10/70	Oil/Water Separation System with Sea Skimmer; by The Garrett Corp., AiResearch Manufacturing Div., Los Angeles, Calif.	GPO - $1.50
15080DJQ04/70	Ultrasonic Emulsification of Oil Tanker Cargo; by Sonics International, Inc., Dallas, Texas	NTIS - PB 193 674
15080DOZ12/70	Testing and Evaluation of Oil Spill Recovery Equipment; by Maine Port Authority, Portland, Maine	GPO - $1.50 NTIS - PB 200 081
15080DXE11/70	Feasibility Analysis of Incinerator Systems for Restoration of Oil Contaminated Beaches; by Envirogenics Co., Div. of Aerojet-General Corp., El Monte, California	GPO - 75¢ NTIS - PB 198 227

Report Number	Title/Author	Source
15080DZR11/70	Santa Barbara Oil Pollution, 1969; by University of California, Santa Barbara, California	GPO - 55¢ NTIS - PB 197 670
15080EAG07/69	Review of Santa Barbara Channel Oil Pollution Incident; by Pacific NW Laboratories, Battelle Memorial Institute, Richland, WA	NTIS - PB 191 712
15080EAL02/71	Santa Barbara Oil Spill: Short-term Analysis of Macroplankton and Fish; by University of California, Santa Barbara, California	GPO - 70¢
15080EBZ12/70	Effects of Oil Pollution on Waterfowl: A Study of Salvage Methods; by Zoological Society of San Diego, California	GPO - 50¢ NTIS - PB 198 091
15080EHO05/69	Oil Dispersing Chemicals; by M. Poliakoff, for the Edison Water Quality Laboratory, FWQA, Edison, New Jersey	NTIS - PB 188 207
15080EIL12/69	Proceedings: Joint Conference on Prevention and Control of Oil Spills; sponsored by the American Petroleum Institute and the Federal Water Quality Administration	NTIS - PB 194 395
15080EOS03/70	Preliminary Operations Planning Manual for the Restoration of Oil-Contaminated Beaches; by URS Research Company, San Mateo, Calif.	NTIS - PB 191 711
15080EOS10/70-1	Evaluation of Selected Earthmoving Equipment for the Restoration of Oil-Contaminated Beaches; by URS Research Co., San Mateo, CA	GPO - $1.50 NTIS - PB 206 693
15080EPL04/70	Spreading and Movement of Oil Spills; by H. G. Schwartzberg, New York University, New York, New York	NTIS - PB 192 852
15080EUU10/70	Vortex Separation Process for Oil Spill Recovery Systems; by American Process Equipment Corp., Panama City, Florida	GPO - 60¢ NTIS - PB 201 656
15080FHS08/69	Cleaning Oil-Contaminated Beaches; by Northeast Region Research & Development Program, FWQA, Edison, New Jersey	NTIS - PB 189 172
15080FHT12/69	Oil Sampling Techniques; by Edison Water Quality Lab., FWQA, Edison, New Jersey	NTIS - PB 190 171

Report Number	Title/Author	Source
15080FHU10/69	Biological Effects of Oil Pollution - Bibliography: by Edison Water Quality Laboratory, FWQA, Edison, New Jersey	NTIS - PB 188 206
15080FTU05/71	Oil Pollution Incident, Platform Charlie, Main Pass Block 41 Field, Louisiana; by Alpine Geophysical Associates, Inc., Norwood, New Jersey	GPO - $1.25 NTIS - PB 203 497
15080FWN07/71	Recovery of Floating Oil Rotating Disk Type Skimmer; by Atlantic Research Systems Div., The Susquehanna Corp., Costa Mesa, Calif.	GPO - $1.25 NTIS - PB 205 208
15080FWO02/71	Floating Oil Recovery Devices; by New Mexico State University, Las Cruces, NM	GPO - $1.00
15080FWP04/71	Concept Development of a Hydraulic Skimmer System for Recovery of Floating Oil; by Battelle Memorial Institute, Richland, Washington	GPO - $1.25 NTIS - PB 203 498
15080HOL01/72	A Feasibility Demonstration of an Aerial Surveillance Spill Prevention System; by R. I. Welch, A. D. Marmelstein, and P. M. Maughan, Earth Satellite Corp., Washington, D. C.	GPO - $2.00
EPA-R2-72-033 15080 EHP	Air Modulated Vacuum Oil Recovery Collection of Spilled Oil (Foams); by The City of Cleveland, Ohio	GPO - 75¢
EPA-R2-72-006 15080 GBJ	A Free Floating Endless Belt Oil Skimmer; by R. W. Agnew, Rex Chainbelt, Inc., Milwaukee, WI	GPO - $1.50
EPA-R2-72-049 15080 HEU	Concept Evaluation: Recovery of Floating Oil Using Polyurethane Foam Sorbent; by C. H. Henager and J. D. Smith, Battelle Pacific Northwest Laboratories, Richland, WA	GPO - $1.50
1509 - Hazardous Material Spills		
15090FOZ10/70	Control of Spillage of Hazardous Polluting Substances; by Battelle Memorial Institute, Pacific NW Laboratories, Richland, WA	GPO - $3.00 NTIS - PB 197 596
EPA-R2-72-010 15090GLU	Rapid Detection System for Organophosphates and Carbamate Insecticides in Water; by Midwest Research Institute, Kansas City, Missouri	GPO - 75¢

AGRICULTURAL SOURCES
PROGRAM ELEMENT 1B2039

While the control of municipal and industrial point sources of pollution are receiving the major portion of resources within both the Federal Government and the private sector, non-point sources of pollution have been recognized to contribute higher volumes of pollutants to our Nation's watercourses than all point sources combined. Moreover, the agricultural industry has been identified as the greatest single contributor of non-point sources of pollution in most regions of the Nation. Among the pollutants originating from agricultural sources are sediment and the pesticides, herbicides and nutrients it carries, dissolved inorganic nutrients such as nitrates and phosphates, biodegradable and refractory organics, pathogenic organisms, and odor and dust.

Within the Applied Science and Technology Branch of the Office of Research and Monitoring, a significant research, development and demonstration effort has been underway to characterize the pollutants emanating from agricultural sources, and to identify feasible waste management technology for both remedial treatment and control and for recycle-reuse where applicable. The categories of agricultural sources addressed by this program, and the program element numbers previously assigned separately to these categories are:

Forestry and Logging - 13010 (323101)
Agricultural Runoff - 13020 (323102)
Irrigation Return Flows - 13030 (323103)
Animal Feedlots - 13040 (323104)
Natural Runoff - 15060 (323107)

A short summary follows for the problems and program objectives of each of these categories which are all presently covered by the Agricultural Sources Program Element (1B2039).

Forestry and Logging

The application of pesticides and fertilizers for high yield forest production and log harvesting methods (e.g. "clean cut" harvesting) leads to pesticide, nutrient, sediment and organic waste contamination of watercourses. Slash burning of harvested areas and log rafting in watercourses cause related problems. Means for the prevention or control, of these problems are required to enable forest-using agribusiness complex to meet water quality standards and to improve their overall production management practices.

Preceding page blank

Little significant research other than that conducted to improve forest production has been accomplished. Consequently, the R,D&D program must necessarily entail "Problem definition" studies particularly in the pulp forests of the Southeast and the lumber forests of Alaska. Somewhat more work has been accomplished in the Pacific Northwest regarding problem definition. Accordingly, emphasis in this area will be to develop (for example) effective forest management practices to minimize sediment and organic refuse pollution due to logging activities. Other work such as demonstration of proper fertilization techniques must be accomplished.

All work will be in conjunction with industry, States, institutions and other agencies, such as the Bureau of Sport Fisheries and Wildlife (USDI) and the U. S. Forest Service (USDA). Even though locally severe problems may occur, the National impact of this source of pollution is considerably less than those of other agricultural sources; consequently, this program currently has a somewhat lower priority than that of pesticides used on cropland, feedlots and irrigation return flows.

Agricultural Runoff

Nutrients from fertilizers, persistent pesticides and herbicides, and sediment (both in and of itself and as a carrier of contaminants) have caused considerable water pollution. Methods are needed to prevent and control the 1 billion tons of sediment runoff, and pollution from the runoff from the 700 million pounds of pesticides and 10 million tons of fertilizers which reach watercourses each year. Revised and improved management methodology is required to assure minimum economic losses to crop production and minimum adverse effects on the environment.

Program objectives are to provide an effective array of guidelines, methods, and criteria to aid farmers in controlling agricultural runoff; to develop and demonstrate management techniques, mathematical model tools, and improved cultural practices to mitigate these problems. Basic control and management measures for nutrient and sediment runoff, and "use" criteria for persistent pesticides will be developed and demonstrated.

Because runoff pollution is inherently related to rainfall (and other climatic and edaphic variations) the R,D&D effort is fully National in impact and in current program emphasis. Important regional differences which affect general prevention or control procedures must be elucidated.

Most ongoing extramural efforts are currently supporting a significant in-house and interagency modelling effort with the Soil Conservation Research Division of the Agricultural Research Service, USDA, at Watkinsville, Georgia.

Irrigation Return Flows

It has long been recognized that the quality of water draining from irrigated areas was seriously degraded from that of the irrigation water applied. Agriculturists have viewed this as a natural consequence of the processes involved, and little attention has been given to the possibility that progress could be made toward controlling or alleviating the contributions of mineral salts and nutrients to our nation's water resources. Recent Federal legislation and a greatly increased National concern have caused a reversal of this attitude, and EPA has been charged "to establish a National policy for the prevention, control, and abatement of water pollution." The water quality problems associated with irrigation return flows are of special concern because irrigated agriculture is the largest consumer of public water resources, especially in the arid and semi-arid western States. It also is of major importance to the economy of a large sedment of the nation and the supplier of a significant part of the food and fiber produced annually.

Completed and ongoing projects and program needs dictate that emphasis be placed on (1) improving water delivery systems, including canal and lateral lining; (2) on-farm water management methods such as automated water scheduling, and improved application methods such as drip, or "trickle" and subsurface; (3) improved pesticide and fertilizer application methods; (4) improved cultural practices such as reduced tillage and controlled leaching; (5) tailwater recovery and reuse; and (6) subsurface return flow collection and diversion, dilution, and/or treatment where required.

Present and past efforts have been conducted in-house in cooperation with other State (e.g. State of California) and Federal agencies (e.g. Bureau of Reclamation, USDI), and with the academic community.

Animal Feedlots

Confined animal (beef, dairy, swine) and poultry operations are dramatically increasing in number and size. Runoff, particularly from beef, swine and dairy operations have caused numerous fish kills. Untreated, this runoff will have a BOD varying from 20,000 to 60,000 parts per million, and COD as high as 240,000 parts per million, as well as solids and bacterial contaminants. With the growth of this "industry" (beef feedlots are now as large as 100,000 head), a considerable Research, Development and Demonstration effort is required to provide an array of coordinated animal and waste management techniques.

Based upon industry trends and program R,D&D needs, emphasis in the animal feedlot category is primarily concerned with: 1) reprocessing and reuse systems for animal and poultry waste, such as refeeding, pyrolysis, ammonia and/or methane gas production, building materials, etc; 2) demonstration of treatment/land disposal systems for animal and poultry wastes from small operations; 3) demonstration of measures to control such ancillary pollutants as odor, dust, antibiotics, etc. 4) D&D of methods to control pollutants from certain feedlots, such as new lots, abandonded lots, and containment/treatment/land disposal of snowmelt runoff; 5) D&D of animal management concepts which minimize pollution source problems; and 6) dissemination of R,D&D results and waste management guidelines governing animal and poultry waste.

A new segment of this category of R,D&D projects addresses the problems attendent to the confined feeding and harvesting of cold and warm water species of fish. However, due to limited availability of funds, efforts presently are concentrated on characterization of the catfish production industry and identification of feasible treatment, control and recycle/ "closed loop" technology which would be amenable to large scale demonstration.

While a limited amount of work is being accomplished in-house, the majority of the effort is done by the academic community, with operating entities of the industry itself, and with the Agricultural Research Service of USDA. The primary mechanism of program accomplishment is the demonstration grant with feedlot operators utilizing consultants or universities for project evaluation.

Natural Runoff

Runoff of salinity, sediment and nutrients from natural sources has been found to contribute a significant portion of the total pollutional load on watercourses in the western United States, where most of the "virgin" forests and mineral springs which contribute to runoff are found. Neither has the magnitude and impact of natural runoff on water quality been evaluated to any significant degree, nor has there been any criteria or directives established for the abatement of this source of pollution.

Program objectives are to define the magnitude and impact of the runoff of dissolved solids, nutrients and salinity from natural sources such as "virgin" forests, mineral springs, gypsum deposits and the like. It is expected that a majority of the sources of natural runoff will lie west of the Mississippi River, a region which has been less subject to urban, suburban and rural development. Therefore, the larger portion of this program's emphasis will be allocated to the West.

The intended result of the program will be: A delineation of the impact and magnitude of pollutional loads from various natural sources; development of mathematical models which will predict runoff of salinity, dissolved solids and nutrients when they occur naturally and when they are mitigated by control measures; establishment and demonstration of the possibility and extent of these control measures.

To date, efforts in this area have been minimal. It is hoped that funding will be approved for this effort in FY 74.

FORESTRY AND LOGGING

INFORMATION SHEET

This sheet describes briefly a Section 5 Research Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13010 EGA

TITLE OF PROJECT: "Studies on Effects of Watershed Practices on Streams"

GRANTEE OR CONTRACTOR:	PROJECT DIRECTOR:
Oregon State University Corvallis, Oregon 97331	James T. Krygier Forest Hydrology Section (Forest Science) Forest Research Laboratory Corvallis, Oregon 97331

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost:	$50,575	Obligation Date:	July 1, 1969
Total Federal Cost:	$37,552	Completion Date:	June 30, 1970

FINAL REPORT: 13010 EGA 02/71

TITLE: Studies on Effects of Watershed Practices on Streams

Author James T. Krygier, et. al.

Abstract

The primary aims of this project have been to establish the magnitude of environmental impacts of logging on water temperature in terms of the regime of temperature; to predict water temperature changes by methods appropriate to engineering to determine the downstream effect; and establish cover requirements to maintain temperature at given levels.

Final Report Now Available From:
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

EPA Hq Form 5330-3 (6-72)

Preceding page blank

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S800915

TITLE OF PROJECT: "Fate of Nitrogen Fertilizers in Forest Soil; Conversions, Movement, and Losses"

GRANTEE:	PROJECT DIRECTOR:
Crown Zellerbach Corporation Central Research Camas, Washington 98607	Dr. Herman R. Amberg Director, Environmental Services Crown Zellerbach Corporation Camas, Washington 98607

Project Site: Camas, Washington and Vicinity

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	July 1, 1972	**Project Cost:**	$80,650
Completion Date:	March 31, 1974	**Federal Cost:**	$50,000

DESCRIPTION OF PROJECT

A series of investigations will determine relationships of the following factors to volatilization losses, conversion of fertilizer to other nitrogen compounds, and downward movement of nitrogen forms in the soil profile:

1. Factors associated with nitrogen fertilizers--Chemical formulation, granule size and application rate.
2. Properties of forest soils and forest floors--texture, structure, depth, pH, cation exchange capacity, buffering capacity, microbial population and urease activity.
3. General climatic variables--soil temperature, soil mositure, air temperature, relative humidity, air movement, amount and timing of rainfall.
4. Exploration and selected tests of combinations (interactions) of the above factors.

The possibility exists that nitrogen volatilized from forest soil may be reabsorbed by various components of the forest ecosystem, thereby decreasing potential losses. Therefore, tests will be made of the capacity of water, soil, forest floor, understory vegetation, and coniferous seedlings for absorption of ammonia and nitrogen oxides.

Plant uptake is an influential factor in leaching losses. For treatments having substantial leaching losses, tests will be made with green plants in the system.

Project Officer:

H. Kirk Willard
Paper and Forest Industries Research Section
National Environmental Research Center
Environmental Protection Agency
200 S. W. 35th Street
Corvallis, Oregon 97330

EPA Hq Form 5330-1 (6-72)

DIRECT INQUIRIES TO PROJECT OFFICER

21-AOL-04

AGRICULTURAL RUNOFF

INFORMATION SHEET

This sheet describes briefly a Section 5 Research Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13020 DGX

TITLE OF PROJECT: Role of Animal Wastes in Agricultural land Runoff

GRANTEE OR CONTRACTOR:	PROJECT DIRECTOR:
Water Resources Research Institute North Carolina State U. Raleigh, N. C.	Dr. David Howells Water Resources Research Institute North Carolina State U. Raleigh, N. C.

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost: $82,597

Obligation Date: July 1, 1968

Total Federal Cost: $76,349

Completion Date: August 31, 1970

FINAL REPORT: 13020 DGX 08/71

TITLE: Role of Animal Wastes in Agricultural land Runoff

Author Dr. David Howells, et. al.

Abstract

The project will survey several well defined small watersheds that contain significant confined and unconfined animal growing. The survey will assess the water quality of the drainage from the watershed and correlate it with such factors as type of growing facilities, animal densities, feeds, waste disposal facilities and practices, topographic features, and soil factors in order to develop relationships for estimating the pollutional impact from animal growing watersheds in the Middle Atlantic and Southeastern United States.

Final Report Now Available from:
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Preceding page blank

INFORMATION SHEET

This sheet describes briefly a Section 5 Research Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13020DPB

TITLE OF PROJECT: Agricultural Contributions to Nutrients in Water

GRANTEE OR CONTRACTOR:	**PROJECT DIRECTOR:**
Dept. of Agronomy and Soils Cornell University Ithaca, New York 14850	Dr. Paul J. Zwerman Dept. of Agronomy and Soils Cornell University Ithaca, New York 14850

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost: $160,883	**Obligation Date:** July 1, 1969
Total Federal Cost: $147,268	**Completion Date:** May 31, 1971

FINAL REPORT: 13020 DPB 08/71

TITLE: Management of Nutrients on Agricultural Land for Improved Water Quality

Author Dr. Paul Zwerman, et. al.

Abstract

A rainfall simulator was utilized to determine the effects of 2, 10, and 20 year storm frequencies on losses of water, soil and nutrients from plots subjected to different crop rotations, fertilizer schemes and manure applications. Crop rotations, rates of fertilizer and manure were compared. Simulations were made on freshly tilled soil. Comparative erosion losses were as follows: continuous sod < corn - alfalfa rotations < continuous corn. Fertilizer alone tended to increase runoff, but this effect was overcome when fertilizer was used with manure. Continuous recording of surface and subsurface flow and subsequent losses of nutrients to the environment was conducted on larger plots. Rate and time of fertilizer determined the plant nutrients lost. Returning crop residues to the soil improved water infiltration, increasing deep seepage losses. Proper timing of fertilizer applications could control adverse environmental effects. Phosphorus inputs into cultural media as it related to algal growth was studied. Sustained concentration of phosphorus at or above a critical concentration determined the biomass phosphorus.

Final Report Now Available from:

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

INFORMATION SHEET

This sheet describes briefly a Section 5 Research Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: R-800401 (13020 DWH)

TITLE OF PROJECT: Nutrient Inputs to Streams from Fertilizers

GRANTEE OR CONTRACTOR:

Dept. of Natural Resources &
Environmental Studies
Alabama A & M University
Normal, Alabama 35762

PROJECT DIRECTOR:

Dr. Robert R. Bradford

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost: $90,431

Obligation Date: 7/1/69

Total Federal Cost: $85,446

Completion Date: 12/31/72

FINAL REPORT: IN PREPARATION

TITLE: Nutrient Inputs to Streams from Fertilizers

Author Dr. Robert R. Bradford, et. al.

Abstract

This project aims to provide information with respect to nutrient inputs of nitrogen and phosphorus to intermittent streams which, are derived from fertilizers applied to different row crops. "Slow-release" nitrogen fertilizers are included to determine whether water quality, relative to nitrogen content, can be improved through the use of these fertilizers on some agronomic crops. Since water carried by intermittent streams discharges to major watercourses, data obtained may be used to derive reliable estimates for nutrient inputs from farm lands over the entire watershed area.

Test crops of corn and millet (forage crop) will be utilized in this study. Devices and procedures for collection and chemical analysis of surface and subsurface waters will also be employed.

INFORMATION SHEET

This sheet describes briefly a Section 5 Research Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13020 EBL

TITLE OF PROJECT: Pesticide Movement from Cropland into Lake Erie

GRANTEE OR CONTRACTOR:	PROJECT DIRECTOR:
Ohio State University Research Foundation 1314 Kinnear Rd. Columbus, Ohio 43212	Dr. A. C. Waldron Academic Faculty of Entomology Ohio State University Columbus, Ohio 43212

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost:	$25,205	Obligation Date:	June 1, 1971
Total Federal Cost:	$23,431	Completion Date:	May 31, 1972

FINAL REPORT: In Preparation

TITLE:

Author Dr. A. C. Waldron , et. al

Abstract

The project proposes to assess the contribution of agricultural runoff to the pesticide pollution of Lake Erie. This will involve determining the concentrations of the major pesticides and/or their metabolites present in water and in the sediments in several of the tributaries in Northern Ohio entering Lake Erie.

INFORMATION SHEET

This sheet describes briefly a Section 6b Research Contract

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed *under the provisions of the*

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 68-01-0721

TITLE OF PROJECT: Dynamic Pesticide Transport and Runoff Model for Mechanistic Evaluation in Small Watersheds

GRANTEE OR CONTRACTOR:	PROJECT DIRECTOR:
Environmental Systems Laboratory, Inc. 495 Java Drive Sunnyvale, California 94086	Dr. C. M. Hogan

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost:	$39,448	**Obligation Date:**	June 16, 1972
Total Federal Cost:	$39,448	**Completion Date:**	December 16, 1972

FINAL REPORT: IN PREPARATION

TITLE: Dynamic Pesticide Runoff Model for Mechanistic Evaluation in Small Watersheds

Author Dr. C. M. Hogan, et. al.

Abstract

To define a mathematical model and develop a computer program to assist in the analysis and prediction of pesticide transport, movement and runoff from agricultural lands fo small areal extent. Primary effort will focus on developing and calibrating a single runoff event dynamic model to predict the transport of pesticides from a prescribed zone of application to a specified hydrologic boundary. The model will also include the capacity to simulate those chemical, biological, and physical processes occurring between runoff events so as to internally generate appropriate boundary conditions needed for sequential runoff prediction.

INFORMATION SHEET

INTERAGENCY COOPERATIVE AGREEMENT

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: EPA-IAG-038(D), (13020 HHD)

TITLE OF PROJECT: Attenuation and Runoff of Pesticides from Agricultural Lands to Surface Waters

COOPERATING DEPARTMENT:

Agricultural Research Service
Soil and Water Conservation
Research Division, U. S. Dept.
of Agriculture Washington, D.C.
20250

Project Site:
Watkinsville, and Athens, Georgia

PROJECT DIRECTOR:

Dr. James Box
So. Piedmont Conservation Research Center
Soil and Water Conservation Research Div.
USDA, ARS
Watkinsville, Georgia

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 7/1/72

Completion Date: 6/30/73

	FY 73	Total
Project Cost:	$211,700	$579,200
Federal Cost:	$160,000	$230,000

DESCRIPTION OF PROJECT

The specific objectives of this project are the following:

1. Measure the persistence of selected pesticides and relative runoff losses as influenced by soil and crop management, pesticide properties, formulations, application technology, and climatic factors.
2. Measure the loss of selected pesticides in runoff from small watersheds, relate their losses to: soil and pesticidal properties, application technology and associated hydrologic and selected management formulations factors.
3. Establish scalar relationships between small plots and natural watersheds in terms of pesticide loss in runoff.
4. Relate pesticide transport to sediment characteristics on a seasonal basis as affected by rainfall characteristics.
5. Use the data and relationships obtained from this research to develop test, verify, and refine, if necessary, a Pesticide Runoff Mathematical Model.

Project Officer: Dr. H. Page Nicholson
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13020 HMV

TITLE OF PROJECT: Development of a Low Cost Slow Release Fertilizer Produced from a Waste Product

CONTRACTOR:	**PROJECT DIRECTOR**
Ferguson Industries Dallas, Texas 75220	Mr. Juan E. Lanier Vice President

Project Site: Dallas, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date: July 1, 1972

Project Cost: $270,000

Completion Date: Sept. 30, 1973

Federal Cost: $220,000

DESCRIPTION OF PROJECT

The project involves the use of a new wet-process fertilizer production technique to produce a new slow-release fertilizer. Waste ammonium sulfate will be utilized in producing the new fertilizer, thus alleviating pollution and disposal problems relating to this waste material.

Salient features of the investigation include demonstrating the cost effectiveness and fertilizer runoff abatement characteristics of the slow-release compound particularly related to water pollution due to nitrogen and phosphorus runoff from cropland.

Project Officer: Dr. Robert R. Swank
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R 800364 (13020 HLP)

TITLE OF PROJECT: The Study and Use of Soil Parameters for Describing Pesticide Movement Through Soils

GRANTEE:

Dept. of Agronomy
Oklahoma State University
Stillwater, Oklahoma 74074

PROJECT DIRECTOR:

Dr. James M. Davidson
Dept. of Agronomy
Oklahoma State University
Stillwater, Oklahoma 74074

Project Site: Stillwater, Oklahoma

SPECIFIC DATA ABOUT THIS AWARD

Award Date: May 1, 1972

Completion Date: April 30, 1974

Project Cost: $83,552

Federal Cost: $71,591

DESCRIPTION OF PROJECT

The project will be concerned with identifying major parameters controlling the movement of pesticides through different soil materials and testing of various mathematical models for their ability to describe this movement. The primary mechanisms of pesticide mobility will be investigated in the laboratory under controlled environmental conditions, in saturated and unsaturated soils which are stratified in their pore geometry. The data collected from these experiments will serve to test various mathematical models to determine the most widely applicable model. Field evaluation on a limited scale in a dynamic soil environment will further test the validity of the model ultimately chosen. This model will serve as a sub-element to the Pesticide Runoff Mathematical Model being developed in-house and field tested by the United States Department of Agriculture - Agricultural Research Service. Moreover a significant contribution will be made toward formulation of regulations for the use of pesticides.

Project Officer: Dr. George W. Bailey
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R-800400 (13020 DTV)

TITLE OF PROJECT: "Quantification of Pollutants in Agricultural Runoff"

GRANTEE:	**PROJECT DIRECTOR:**
South Dakota State University Brookings, South Dakota 57006	James N. Dornbush, Professor Civil Engineering Department South Dakota State University Brookings, South Dakota 57006

Project Site: South Dakota State University, Brookings, South Dakota

SPECIFIC DATA ABOUT THIS AWARD

			FY 72	Total
Award Date: February 1, 1972		**Project Cost:**	$53,680	$186,590
Completion Date: January 31, 1973		**Federal Cost:**	$49,610	$174,850

DESCRIPTION OF PROJECT

The objectives of the project are to: (1) quantify the pollutional constitutents in agricultural surface runoff and express them as contributions per unit area or per unit runoff and as concentration (mg/l or ppm), (2) relate unit pollutant contributions to soil types, land uses and management practices and climatological factors, and (3) relate the portion of pollution constitutents associated with both dissolved and suspended solids.

Composited and grab samples of surface runoff will be collected from seven carefully selected representive drainage basins using automatic self-starting samplers. Rainfall on and the flow from the drainage areas will be measured. Spring runoff from frozen land surfaces would receive special attention. Drainage areas will consist of cropland with both row and small grain crop cover, pasture and grassland. Analyses of samples will include determination of nitrogen and phosphorus forms pesticides, COD, BOD, dissolved and suspended solids, coliform and other fecal organisms.

Periodic recording of the land use changes and prevailing drainage basin cover conditions would be accomplished utilizing aerial reconnaissance. Photographs will be used to provide permanent land use records.. Records of applications of fertilizers and pesticides obtained from the land users will be correlated with pollutant contributions in the runoff. It is anticipated that the quantitative information provided by this investigation may be extrapolated to apply throughout the Upper Great Plains region.

Project Officer: Ronald R. Ritter --- EPA- Region VII
1735 Baltimore Ave.
Kansas City, Missouri 64108
Phone: (816) 374-5616

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R-800483

TITLE OF PROJECT: Pesticide Runoff in the Great Lakes Basin

GRANTEE:
Michigan State University
East Lansing, Michigan 48823

PROJECT DIRECTOR:
Dr. Boyd G. Ellis
Crop and Soil Science Department
Michigan State University
East Lansing, Michigan 48823

Project Site: East Lansing, Michigan

SPECIFIC DATA ABOUT THIS AWARD

Award Date: September 22, 1972

Completion Date: September 21, 1973

Project Cost: $92,540

Federal Cost: $80,030

DESCRIPTION OF PROJECT

Two matched watersheds, each of 1.5 acres and 6% slope and possessing soil profiles typical of many in the Great Lakes Basin, will be planted in corn. Project objectives will be to: 1) to evaluate the movement of dieldrin, paraquat and amiben in the water and sediment being lost from natural watersheds in the Great Lakes Basin, 2) to furnish these analytical data together with prior hydrologic and climatic data which will allow for evaluation by systems analysis of movement of pesticides from soils, 3) to verify modes of pesticide transportation in a natural system.
Soil samples will be collected from each watershed, in a grid pattern (20 samples with each sample being composed of 20 cores each 0-1 inch depth) and analyzed for dieldrin, paraquat and amiben to verify initial distribution after application. Soil samples will be collected in the same pattern after the first rainfall which produces measurable runoff to access redistribution of the pesticides within the watershed.
All runoff will be monitored and samples collected and separated with time during each runoff. The samples will be separated into water and sediment and each analyzed for dieldrin, paraquat and amiben. Samples will be taken prior to pesticide application to establish background levels in the runoff.

Project Officer:
Dr. Geroge W. Bailey
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R-801666 (13020 GFK)

TITLE OF PROJECT: Losses of Fertilizers and Pesticides in Runoff and Erosion

GRANTEE:
Curators of the University of
Missouri
Columbia, Missouri 65201

PROJECT DIRECTOR:
George E. Smith
Department of Agronomy
University of Missouri
Columbia, Mo. 65201

Project Site: Columbia, Missouri

SPECIFIC DATA ABOUT THIS AWARD

Award Date: July 1, 1972

Completion Date: June 30, 1973

	FY 73	Total
Project Cost:	$24,483	$46,578
Federal Cost:	$21,196	$41,141

DESCRIPTION OF PROJECT

This study proposes to analyze the runoff and sediments removed from 31 soil erosion plots (on midwest claypan research farm, near McCredie, Missouri). Variables are, rates of fertilizer application (nitrogen and phosphorous), pesticides, tillage practices and cropping systems.
Analyses will be made of the runoff water and sediments and will determine the amount of nutrients and pesticides lost to surface water and penetrating through the soil profile. Studies will also be made of the nitrogen and phosphate contents of water entering three reservoirs in farming areas. Analyses of water samples will show retention in the reservoir and the quantity that eventually enters streams below the impoundments.
Soils differ widely in properties. These results will provide accurate information on the effects and fate of fertilizers and pesticides applied to calypan soils that represent about 5 million acres of cropland in the mid-continent states. This type of information on a number of soil types in essential before an accurate assessment of different farm practices on water pollution can be made.

Project Officer: Mr. Arthur Burks
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R801835 (13020 GRQ)

TITLE OF PROJECT: Volatilization Losses of Pesticides from Soils

GRANTEE:
University of California
Riverside, California

PROJECT DIRECTOR:
Dr. W. J. Farmer
Deparment of Science & Engineering
University of California
Riverside, California

Project Site: Riverside, California

SPECIFIC DATA ABOUT THIS AWARD

			FY 73	Total
Award Date:	November 1, 1972	**Project Cost:**	$35,239	$70,139
Completion Date:	October 31, 1973	**Federal Cost:**	$25,000	$51,023

DESCRIPTION OF PROJECT

This project has two goals: (1) to determine the physicochemical properties of soil-water-air system which affects the volatilization loss of pesticides from soil surfaces and (2) utilizing this information to develop mathematical models to predict pesticide losses from soil surfaces based mainly on the physico-chemical properties of the pesticides themselves. The project includes evaluations of climatic and edaphic conditions as these factors affect volatilization of such widely used pesticides as "Treflan", "Sevin", atrazine, and picloram.

PROJECT OFFICER: Dr. George W. Bailey
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

21-AOQ-05

EPA Hq Form 5330-1 (6-72)

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 68-01-0887

TITLE OF PROJECT: Development of Pesticide Transport and Runoff Model

CONTRACTOR:
Hydrocomp, Inc.
1502 Page Mill Road
Palo Alto, California

PROJECT DIRECTOR
Dr. Norman Crawford

Project Site: Palo Alto, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1972

Project Cost: $74,932

Completion Date: April 30, 1973

Federal Cost: $74,932

DESCRIPTION OF PROJECT

To develop and calibrate a single event dynamic pesticide runoff model with the capability for sequential rainfall response prediction based on bookkeeping of pesticide and soil status between events. The intent is not to focus on elaborate meteorological input simulation routines or receiving stream and impounded water integration and distribution analyses, but to develop a code such that large agricultural areas are automatically subdivided into "model" hydrologic sub-units whose response can be accurately simulated (dynamically) per each rainfall event, and subsequentially thereafter, based on the algorithms structured and calibrated in this research effort. The overall basin response is then to be fabricated via suitable storage and routing routines and output options so that the appropriate pesticide source terms as a function of time during a given rainfall event may be computed.

Project Officer: Dr. George W. Bailey
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

21-AOM-27

EPA Hq Form 5330-2 (6-72)

IRRIGATION RETURN FLOWS

Preceding page blank

INFORMATION SHEET

INTERAGENCY COOPERATIVE AGREEMENT

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: EPA-IAG-048-(D) (13030 EII)

TITLE OF PROJECT: Prediction of Mineral Quality of Return Flow Water from Irrigated Land

COOPERATING AGENCY:	PROJECT DIRECTOR:
Bureau of Reclamation U. S. Dept. of Interior Washington, D. C.	Mr. Robert Wilson Bureau of Reclamation Engineering and Research Center Denver, Colorado

Project Site: Vernal, Utah & Denver, Colo.

SPECIFIC DATA ABOUT THIS AWARD

			FY 73	Total
Award Date:	July 1, 1972	Project Cost:	$75,000	$480,000
Completion Date:	June 30, 1973	Federal Cost:	$75,000	$480,000

DESCRIPTION OF PROJECT

This project is designed to develop and verify a mineral quality prediction model for the Vernal, Utah, study area, which typifies a combination of soil, climate, geologic, and hydrologic conditions found in broad areas of irrigable lands throughout the Western states. The intended ultimate product of this project is a set of verified techniques that can be used in almost all irrigated areas to preassess the need for improved irrigation management and/or structural modifications as well as predict the quality and effects of irrigation return flows.

Project Officer: Dr. Arthur G. Hornsby
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

21 AOW-02

Preceding page blank

INFORMATION SHEET

This sheet describes briefly a Section 5 Demonstration Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13030 ELY

TITLE OF PROJECT: Nutrient Removal From Agricultural Wastewaters

GRANTEE OR CONTRACTOR:

Dept. of Water Resources
State of California
Sacramento, California 95802

PROJECT DIRECTOR:

Louis A. Beck
San Joaquin District
Dept. of Water Resources
State of California
P. O. Box 2385
Fresno, California 93723

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost:	$689,590	**Obligation Date:**	April 1, 1967
Total Federal Cost:	$297,990	**Completion Date:**	June 1, 1971

Final Report titles, numbers, and author Agencies are appended.

Abstract

The Bio-Engineering Aspects of Agricultural Drainage reports describe the results of a unique interagency study of the occurrence of nitrogen and nitrogen removal treatment methods for sub-surface agricultural wastewaters of the San Joaquin Valley, California. The three principal agencies involved in the study were the EPA, the Bureau of Reclamation, and the State of California.

A series of fourteen reports has been planned, including summaries of all aspects of the study. Reports have been prepared which describe the prediction of sub-surface agricultural wastewater quality; techniques to remove nitrogen in drainage effluent during transport; reducing nitrogen in discharge water by on-farm practices; desalinization of wastewaters; and algal production and harvesting methods to remove nutrients from wastewaters.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6(b)
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 13030 EZM

TITLE OF PROJECT: "Effects of Furrow, Sprinkler, and Subirrigation Methods on Potential Pollution of Groundwater by Nitrates and Other Solutes"

GRANTEE:	**PROJECT DIRECTOR:**
Texas A&M University Agricultural Research & Extension Center Route 3 Lubbock, Texas 79401	Dr. C. W. Wendt Texas A&M University Agricultural Research & Extension Center Route 3 Lubbock, Texas 79401

Project Site: Knox & Lubbock Counties, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date: May 20, 1970	**Project Cost:** $469,305
Completion Date: May 30, 1973	**Federal Cost:** $300,773

DESCRIPTION OF PROJECT

This project will consist of a series of field and laboratory experiments and data interpretation to determine the effects of subirrigation, conventional irrigation methods and nitrogen fertilizers on underground water pollution.

Field and laboratory facilities in Knox and Lubbock Counties, Texas, will be used to compare current and new irrigation and fertilization methods to determine the following:

a. The contribution of current irrigation and fertilization practices to pollution of underground water.

b. The potential of using modified current irrigation and fertilization practices for immediate reduction of pollution.

c. The potential of using subirrigation for more efficient water application and new systems of fertilization for long range solutions to the pollution problem.

d. The economics of installation, operation, and maintenance of subirrigation systems as compared to conventional irrigation systems and economics of each fertilization practice.

Project Officer:
Dr. James P. Law, Jr.
Robert S. Kerr Environmental Research Laboratory
Environmental Protection Agency
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 13030 GLM

TITLE OF PROJECT: Quantity and Quality of Return Flow as Influenced by Trickle and Surface Irrigation

GRANTEE:	**PROJECT DIRECTOR:**
New Mexico Water Resources Res. Institute P. O. Box 3167 New Mexico State University Las Cruces, New Mexico	Dr. Peter J. Wierenga, Agronomist P. O. Box 30 New Mexico State University Las Cruces, New Mexico

Project Site: Plant Science Farm, NMSU, Las Cruces, N.M.

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 6/28/71	**Project Cost:** $245,279
Completion Date: 6/30/74	**Federal Cost:** $174,456

DESCRIPTION OF PROJECT

The applicant proposes to make a comparative study of the effects of the amount and frequency of surface and trickle or "drip" irrigation treatments on water and solute movement in soil profiles. The attendant economies or diseconomies of water, salinity, crop production, and financial and management requirements will be investigated. The 36 month study will be conducted at the Plant Science Farm of New Mexico State University, using a number of side barriered field plots which will be subject to replications of varying surface and trickle irrigation moisture levels and field water application efficiencies. Surface and subsurface instrumentation will monitor moisture and salinity storage and movement, as well as the change in the quality and quantity of drainage water at stations along collection ditches and the Del Rio Drain. An overall cost-benefit analysis will be provided to ascertain the viability of trickle irrigation as a more advantageous alternative to surface and subsurface irrigation methods presently being employed, in terms of its economic and environmental impacts.

Project Officer: Dr. James P. Law, Jr.
Robert S. Kerr Water Research Center
Environmental Protection Agency
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S 800193

TITLE OF PROJECT: The Control of Nitrates as a Pollutant

GRANTEE:
Texas A&M University
College Station, Texas 77843

PROJECT DIRECTOR:
Dr. Allen R. Swoboda
Soil and Crop Sciences Department
Texas A&M University
College Station, Texas 77843

Project Site: College Station and Temple, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 10-12-72

Project Cost: $75,984

Completion Date: 10-11-73

Federal Cost: $63,000

DESCRIPTION OF PROJECT

The objectives of this project are: to develop practical farming methods which reduce the amount of nitrate which is lost from the soil by leaching and runoff; to quantize the amount of nitrate lost from the soil under various controlled environmental conditions; to develop certain guidelines for the optimum use of nitrogen fertilizers while limiting the amount of nitrate entering our natural resources.

Project Officer:
Dr. J. P. Law, Jr.
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

21 AOT-03

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5 Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-800278 (13030 DOA)

TITLE OF PROJECT: "Grand Valley Salinity Control Demonstration Project"

GRANTEE:
Colorado State University
Agricultural Engineering Dept.
Fort Collins, Colorado 80521

PROJECT DIRECTOR:
Dr. Gaylord Skogerboe
Agricultural Engineering Dept.
Colorado State University

Project Site: Grand Junction, Colorado

SPECIFIC DATA ABOUT THIS AWARD

			FY 72-73	Total
Award Date:	February 1, 1972	**Project Cost:**	$151,193	$768,432
Completion Date:	January 31, 1974	**Federal Cost:**	$108,383	$554,611

DESCRIPTION OF PROJECT

The objectives of this project are: (1) To demonstrate that irrigation scheduling will (a) improve the mineral quality of the Colorado River, (b) increase water use efficiency on the farm, and (c) result in increased crop yields. (2) To demonstrate that tile drainage will (a) improve the mineral quality of the Colorado River and (b) effectively reclaim lands of low agricultural productivity resulting from high groundwater levels. 3. To conduct a National Conference in Grand Valley on "Managing Irrigated Agriculture to Improve Water Quality."

The principal study area in Grand Valley used for demonstrating the effectiveness of canal and lateral lining will also be used to demonstrate irrigation scheduling and tile drainage. At least two farms will be selected near the Colorado River for demonstrating tile drainage, as well as irrigation scheduling. The farms previously used for studying irrigation efficiency will also be used as part of the irrigation scheduling demonstration, along with other farms in the study area.

Project Officer:
Dr. James P. Law, Jr.
Environmental Protection Agency
Robert S. Kerr Environmental Research Laboratory
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

21-AOR-03

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R-800426 (13030 FVN)

TITLE OF PROJECT: Irrigation Return Flow Quality Literature Abstracting

GRANTEE:

Colorado State University
Ft. Collins, Colorado

PROJECT DIRECTOR:

Gaylord V. Skogerboe
Department of Agricultural Engineering
Colorado State Univ.
Fort Collins, Colorado

Project Site: Fort Collins, Colo.

SPECIFIC DATA ABOUT THIS AWARD

			FY '73	Total
Award Date:	2/1/73	**Project Cost:**	$30,855	$95,253
Completion Date:	1-31-74	**Federal Cost:**	$29,216	$89,812

DESCRIPTION OF PROJECT

The purpose of this project is (1) to pull together published results from related research efforts and make these available to others in the field, (2) to maintain a current summary of literature within the irrigation return flow category, within the files of the Water Resources Information Center (WRSIC) EDP facility, (3) to identify gaps in the collective effort and to stimulate research to fill these gaps and (4) to promote (and assist in) application of research results to the solution of water pollution problems.

Project Officer:

Dr. J. P. Law, Jr.
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

21 AOY-14

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S 800687

TITLE OF PROJECT: Irrigation Practices, Return Flow Salinity, and Crop Yields, Phase I: Intensive Study Area

GRANTEE:

Colorado State University
Fort Collins, Colorado 80521

PROJECT DIRECTOR:

Gaylord V. Skogerboe
Agricultural Engineering Department
Colorado State University
Fort Collins, Colorado 80521

Project Site: Grand Junction, Colorado

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 10-11-72

Project Cost: $182,267

Completion Date: 10-10-73

Federal Cost: $146,476

DESCRIPTION OF PROJECT

The objectives of this project are to: 1) evaluate the effects of various irrigation practices on the amount and chemical quality of return flows; 2) evaluate the effects of various irrigation practices on crop yields and fertilizer requirements; 3) demonstrate that improved farm management of irrigation water can reduce the mineral content of return flows; 4) demonstrate that improving the chemical quality of irrigation return flows through better farm irrigation practices is profitable due to increased crop yields and reduced fertilizer expense.

Project Officer:

Dr. J. P. Law, Jr.
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

21 AOT-04

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R-800946

TITLE OF PROJECT: Effect of Water Management on Quality of Ground and Surface Recharge in Las Vegas Valley

GRANTEE:

Desert Research Institute
Center for Water Resources
Las Vegas, Nevada

PROJECT DIRECTOR:

George B. Maxey
Robert F. Kaufmann
4582 Maryland Parkway
Las Vegas, Nevada 89109

Project Site: Las Vegas, Nevada

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 11-21-72

Completion Date: 7-31-73

	FY '73	Total
Project Cost:	$102,405	$690,947
Federal Cost:	$94,995	$612,162

DESCRIPTION OF PROJECT

The hydrogeology of the Las Vegas Valley is being delineated and characterized in an effort to develop management practices which aid in managing the quality of ground and surface recharge in shallow groundwater aquifers. Simulation modeling will be used to predict the effect of management practices on water quality and system response.

Project Officer:

Mr. Fredric Hoffman
EPA-Region IX
100 California Street
San Francisco, California 94110

21 AOW-04

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-801040 (13030 FDJ)

TITLE OF PROJECT: Management Practices for Control of Quality and Quantity of Irrigation Return Flows

GRANTEE:

Dept. of Agric. and Irrig. Engrg.
Utah State University
Logan, Utah 84321

PROJECT DIRECTOR:

Dr. Larry J. King
Dept. of Agric. and Irrig. Engrg.
Utah State University

Project Site: Vernal, Utah

SPECIFIC DATA ABOUT THIS AWARD

Award Date: Jan. 1, 1972

Completion Date: March 31, 1973

	FY '72	Total
Project Cost:	$99,890	$662,442
Federal Cost:	$88,640	$592,740

DESCRIPTION OF PROJECT

The primary objectives of the proposed research are to study various farm management practices related to irrigation and drainage and fertilizer use, and to determine their effects upon the quality and quantity of irrigation return flow. The specific objectives are: (1) to monitor the movement of dissolved salts through the soil profile into the drainage water under different irrigation and (or) drainage management practices; (2) to demonstrate the degree of control over the quality of the drainage water as influenced by these management practices; (3) to monitor the movements and transformations of various forms of nitrogen as the nitrogen moves from applied commercial fertilizer and animal wastes through the soil profile and into the drainage water; (4) to evaluate the effects of various irrigation and (or) drainage management practices upon these movements of nitrogen; and (5) to develop management models which will describe these movements and allow for extrapolation of the results obtained from the research farm to other conditions in other areas.

Project Officer: Dr. James P. Law, Jr.
Robert S. Kerr Environmental Research Laboratory
Environmental Protection Agency
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

21-AOV-04

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-801187 (13030 FST)

TITLE OF PROJECT: "Evaluation and Demonstration of Irrigation Models and Practices To Reduce Contamination in Irrigation Wastewaters"

GRANTEE:
Washington State University
Pullman, Washington

PROJECT DIRECTOR:
Dr. B. L. McNeal
Department of Agronomy and Soils
Washington State University
Pullman, Washington 99163

Project Site: Othello, Washington

SPECIFIC DATA ABOUT THIS AWARD

			FY 73	Total
Award Date:	October 14, 1972	**Project Cost:**	$39,051	$93,179
Completion Date:	October 13, 1973	**Federal Cost:**	$27,863	$51,627

DESCRIPTION OF PROJECT

The objectives of this project are: 1) to demonstrate that proper irrigation practices and fertilizer management can effectively reduce pollutants in irrigation return flows; 2) to develop and promote good water management practices as a means of reducing water quality degradation and to demonstrate the economics of these practices under intensive irrigation agriculture.

Project Officer:
Mr. C. E. Veirs
EPA-Region X
1200 Sixth Avenue
Seattle, Washington 98101

DIRECT INQUIRIES TO PROJECT OFFICER

21 AOV-03

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5 Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-802008

TITLE OF PROJECT: Demonstration of Management Guidelines to Prevent Pollution by Irrigation Return Flow From Rice Fields

GRANTEE:	**PROJECT DIRECTOR:**
Texas A&M University College Station, Texas 77843	Dr. Kirk W. Brown Soil Sciences Department Texas A&M University College Station, Texas 77843

Project Site: College Station & Beaumont, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	December 18, 1972	**Project Cost:**	$110,757
Completion Date:	December 17, 1973	**Federal Cost:**	$76,890

DESCRIPTION OF PROJECT

The objectives of this project are: to conduct field scale experiments on the nutrient, pesticide, and water balance of rice fields with particular emphasis on measurements of deep percolation and released water; to sample and analyze the water entering and leaving the fields by the various pathways for persistent and toxic pesticides and nutrients; to determine the effect of recommended and excessive application rates of nutrients and pesticides on the pollution hazard of rice production; to use the data obtained to develop management practices which will minimize or eliminate the pollution hazard.

Project Officer:

Dr. Arthur G. Hornsby
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

21 AOV-05

DIRECT INQUIRIES TO PROJECT OFFICER

EPA Hq Form 5330-1 (6-72)

ANIMAL FEEDLOTS

Preceding page blank

INFORMATION SHEET

This sheet describes briefly a Section 5 Research Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13040 DEM

TITLE OF PROJECT: "Characteristics of Wastes from Southwestern Cattle Feedlots"

GRANTEE:

Texas Technological College
Water Resources Center
P. O. Box 4630
Lubbock, Texas 79409

PROJECT DIRECTOR:

Dan M. Wells
Water Resources Center
Texas Technological College
Lubbock, Texas

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost: $96,660

Obligation Date: July 1, 1969

Total Federal Cost: $74,955

Completion Date: June 30, 1970

FINAL REPORT: 13040 DEM 01/71

TITLE: Characteristics of Wastes from Southwestern Cattle Feedlots

Author Dr. Daniel M. Wells

Abstract

The objectives of this project were to determine the characteristics of wastes in southwestern cattle feedlots, to evaluate waste control and removal techniques, and to develop criteria for the design and operation of feedlots to minimize water pollution. Complete analyses have been conducted of wastes produced by feeder cattle raised under specific feeding and management regimes and various climatic conditions, data obtained has been correlated, and from these data guidelines have been developed for construction and operation of cattle feedlots from the standpoint of minimizing water pollution.

Final Report Now Available From:
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

INFORMATION SHEET

This sheet describes briefly a Section 5 Demonstration Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: **13040 DKP**

TITLE OF PROJECT: **Closed System Waste Management for Livestock**

GRANTEE OR CONTRACTOR:	PROJECT DIRECTOR:
Michigan State University East Lansing, Michigan 48823	Mr. Merle L. Esmay Agricultural Engineering Dept. Michigan State University East Lansing, Michigan 48823

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost:	$54,608	Obligation Date:	March 3, 1969
Total Federal Cost:	$49,904	Completion Date:	March 2, 1970

FINAL REPORT: 13040 DKP 06/71

TITLE: Closed System Waste Management for Livestock

Author Dr. Patrick O. Ngoddy

Abstract

It is the broad objective of this research to determine the design parameters of a self-contained, automated animal waste management scheme.

The main objective is the development of a liquid manure processing system which is capable of fractionating animal waste into its liquid and solid components, both of which will not cause aesthetic or pollutional problems after processing.

Final report is now available from:
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

INFORMATION SHEET

This sheet describes briefly a Section 6 Demonstration Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13040 DPA and 13040 DDG

TITLE OF PROJECT: "Tertiary Treatment of Animal Waste Waters" and "Animal Waste Management - Demonstration of Feasible Handling and Treatment Processes"

GRANTEE OR CONTRACTOR:

New York State College
of Agriculture
Cornell University
Ithaca, New York 14850

PROJECT DIRECTOR:

Raymond C. Loehr
Dept. of Agricultural Engineering
Cornell University
Ithaca, New York 14850

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost: $490,396

Obligation Date: May 1, 1969

Total Federal Cost: $272,750

Completion Date: May 31, 1972

FINAL REPORT: EPA-R2-72-095

TITLE: Development and Demonstration of Nutrient Removal from Animal Wastes

Author Dr. Raymond C. Loehr

Abstract

The objectives of this project are to: evaluate feasible processes applicable to the removal of nitrogen, phosphorus, and color from animal waste waters, especially intermittent, concentrated waste waters; and indicate the most feasible processes and the manner they may be integrated to treat actual animal wastes. Laboratory scale studies shall be performed to apply such processes as ammonia stripping, denitrification and combined phosphorus precipitaton and color removal on dairy cattle and poultry wastes.

Final Report Now Available From:
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

INFORMATION SHEET

This sheet describes briefly a Section 5 Research Contract

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13040 EGH (14-12-850)

TITLE OF PROJECT: "The Utilization/Disposal of Cattle Feedlot Waste by Pyrolysis"

CONTRACTOR:
Midwest Research Institute
425 Volker Boulevard
Kansas City, Missouri 64110

PROJECT DIRECTOR:
Dr. William Garner
Physical Sciences Division
Midwest Research Institute
Kansas City, Missouri

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost: $75,000

Obligation Date: March 17, 1970

Total Federal Cost: $75,000

Completion Date: March 16, 1971

FINAL REPORT: EPA-R2-72-096

TITLE: The Disposal of Cattle Feedlot Waste by Pyrolysis

Author Dr. William Garner, et. al.

Abstract

The objectives of this project were (a) to determine on a pilot scale the type and amount of products that could be produced by pyrolyzing cattle feedlot waste at various temperatures and pressures and under various inert atmospheres, and (b) to prepare an economic evaluation of the process including capital costs, operating costs, and income from products.

Final Report Now Available From:
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

INFORMATION SHEET

This sheet describes briefly a Section 6(b) Demonstration Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13040 FTX

TITLE OF PROJECT: Waste Treatment Facilities Demonstration - Union Stockyards Company

GRANTEE OR CONTRACTOR:

West Fargo Union Stockyards Co.
West Fargo, North Dakota 58078

PROJECT DIRECTOR:

Mr. Clifford Moore
Moore Engineering Company
West Fargo, North Dakota 58078

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost: $76,532

Obligation Date: June 1, 1970

Total Federal Cost: $53,572

Completion Date: January 31, 1972

FINAL REPORT: In Preparation

TITLE: Stockyard Waste Treatment Facilities Demonstration

Author Mr. Clifford Moore

Abstract

This project involves the use of biological stabilization ponds for the treatment of stockyard wastes. Inflow and effluent quality is to be monitored along with system efficiency. Of primary significance is the evaluation of this type of system for stockyard waste disposal in cold climates.

INFORMATION SHEET

This sheet describes briefly a Section 6(b) Demonstration Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13040 FWB

TITLE OF PROJECT: "Soil Treatment of Cattle Feedlot Runoff

GRANTEE OR CONTRACTOR:
Meat Producers, Inc.
Route 1
Melissa, Texas 75071

PROJECT DIRECTOR:
Mr. Eldon Merritt, General Manager
Route 1
Melissa, Texas 75071

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost: $27,200

Obligation Date: May 15, 1970

Total Federal Cost: $16,300

Completion Date: June 1, 1971

FINAL REPORT: IN PREPARATION

TITLE: Soil Treatment of Cattle Feedlot Runoff

Author Mr. Eldon Merritt

Abstract

The project involves utilizing the effluent from a 12,000 head cattle feedlot operation to spray irrigate controlled land disposal areas to reduce organic and nutrient water pollution. Irrigated areas are to be cropped with high nitrogen using grasses and evaluated as a feasible means for treating feedlot runoff.

INFORMATION SHEET

This sheet describes briefly a Section 5 Research Grant

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

Completed under the provisions of the

Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 13040 FXG

TITLE OF PROJECT: "Evaluation of Beef Feedlot Waste Management Alternatives"

GRANTEE OR CONTRACTOR:	**PROJECT DIRECTOR:**
Oklahoma State University Stillwater, Oklahoma 74074	Dr. Allen F. Butchbaker Department of Agricultural Engineering Oklahoma State University Stillwater, Oklahoma 74074

SPECIFIC DATA ABOUT THE PROJECT

Total Project Cost:	$39,640	**Obligation Date:**	May 20, 1970
Total Federal Cost:	$33,690	**Completion Date:**	February 29, 1971

FINAL REPORT: 13040 FXG 11/71

TITLE: "Evaluation of Beef Feedlot Waste Management Alternatives"

Author Dr. Allen F. Butchbaker

Abstract

This project incorporates computer techniques to aid in developing new feedlot design criteria where waste disposal alternatives are included. Literature reviews and site visits will be employed to prescribe current feedlot design and waste disposal practices. Basic design variables for feedlots (including waste disposal systems) will be programmed to develop minimum cost feedlot design criteria.

Final Report is Now Available from:
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

INFORMATION SHEET

INTERAGENCY COOPERATIVE AGREEMENT

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: EPA-IAG-0200(D) (13040 DPS)

~~TITLE OF PROJECT: "Pollution Abatement~~ from Cattle Feedlots in Northeastern Colorado and Eastern Nebraska"

COOPERATING AGENCY:	PROJECT DIRECTOR
Agricultural Research Service Washington, D. C. 20250	Dr. C. E. Evans Agricultural Research Service P. O. Box E Fort Collins, Colorado

Project Site: Lincoln, Nebraska

SPECIFIC DATA ABOUT THIS AWARD

			FY 73	Total
Award Date:	July 1, 1972	Project Cost:	$183,000	$952,000
Completion Date:	June 30, 1973	Federal Cost:	$ 90,000	$470,000

DESCRIPTION OF PROJECT

The proposal was negotiated and revised in accordance with program priority and technical needs recommended by the project reviewers. The project will determine the extent and kinds of microbial, chemical and organic pollutants entering the atmosphere, soils, and surface and underground water supplies from cattle feedlots in two contrasting climatic zones, northeastern Colorado with annual precipitation of 14-15 inches and eastern Nebraska with annual precipitation of 27-28 inches. It will also evaluate different feedlot management systems for their effectiveness and efficiency in disposing of both liquid and solid wastes under two different climatic conditions.

Project Officer: Ronald Ritter
Environmental Protection Agency
Region VII
1735 Baltimore Ave.
Kansas City, Missouri 64108

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 13040 ELI

TITLE OF PROJECT: Development & Demonstration of Methods for Treatment of Dairy Farm Wastewaters

GRANTEE:	PROJECT DIRECTOR:
H. L. Mills, Brooklawn Dairy Farm Route 1 Hagerstown, Maryland 21740	Dr. David S. Kappe Kappe Associates, Inc. P. O. Box 1036 Rockville, Maryland 20850

Project Site: Mt. Aetna, Maryland

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	Feb. 6, 1970	Project Cost:	$183,860
Completion Date:	Dec. 31, 1972	Federal Cost:	$128,702

DESCRIPTION OF PROJECT

The objectives of the proposed project are basically to develop, to evaluate, and to demonstrate a treatment system that will be able to satisfactorily treat the animal wastes and runoff from dairy cattle holding areas.

The envisioned system will effect treatment biologically and will operate on an automated "fill and draw" basis. This basis of operation has the advantages that it obviates the need for an expensive settling tank and lends itself quite nicely to the intermittent demands of the usual dairy farm work schedule. The system will consist of an aerated grit separator; an aeration tank, which, for experimental purposes, will be divided into two independently operable sections; a blower and pump building; a chlorine contact tank; and means for using the chlorinated effluent for washing down the system and the holding area.

Project Officer: Mr. Donald F. Anderson
Agricultural and Marine Pollution Control Section
Environmental Protection Agency
1901 N. Fort Myer Drive
Arlington, Virginia 22209

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 13040 ERR

TITLE OF PROJECT: "Demonstration of a Recirculating Swine Waste Treatment System Using an RBC"

GRANTEE:
Iowa State University
Ames, Iowa 50010

PROJECT DIRECTOR:
Dr. Thamon Hazon
Dept. of Agricultural Engineering
Iowa State University
Ames, Iowa 50010

Project Site: Ames, Iowa

SPECIFIC DATA ABOUT THIS AWARD

Award Date: March 12, 1970

Project Cost: $273,849

Completion Date: June 30, 1973

Federal Cost: $163,299

DESCRIPTION OF PROJECT

The specific objectives are as follows: (1) Demonstrate the effectiveness of a flushing gutter system for handling manure from a hog finishing building. (2) Demonstrate the effectiveness of the Rotating Biological Contactor system in treating overflow from an anaerobic lagoon receiving liquid hog manure. (3) Demonstrate the suitability of using treated wastewater as the flushing medium for a hog finishing building. (4) Determine the operating costs and management skills required to operate this waste management system.

Project Officer: Mr. Ronald R. Ritter
EPA - Region VII
1735 Baltimore Avenue
Kansas City, Missouri 64108

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6(b)
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 13040 EVM

TITLE OF PROJECT: Demonstration of a Waste Treatment System for Confined Hog-Raising Operations

GRANTEE:	PROJECT DIRECTOR:
Shuster Farms Gower, Missouri 64454	Lee R. Shuster Shuster Farms Gower, Missouri 64454

Project Site: Gower, Missouri

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 9, 1970	Project Cost:	$116,155
Completion Date:	February 28, 1973	Federal Cost:	$78,300

DESCRIPTION OF PROJECT

This project includes biological treatment and stabilization of wastes from a confined hog-feeding operation. Processes include modified extended aeration, final stabilization and cropland disposal of final effluent and solids. System economics and design criteria are to be developed for potential use at other similar installations. Quality determinations of raw wastes, system inflows and outflows, and in-system waste streams are to be included.

Project Officer: Mr. Ronald R. Ritter
EPA - Region VII
1735 Baltimore Avenue
Kansas City, Missouri 64108

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6 Demonstration
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 13040 FYK

TITLE OF PROJECT: "Soil Modification for the Denitrification and Phosphate Reduction of Feedlot Waste"

GRANTEE:
Michigan State University
East Lansing, Michigan

PROJECT DIRECTOR:
Dr. A. E. Erickson
Crop and Soil Sciences Dept.
Michigan State University
East Lansing, Michigan

Project Site: East Lansing, Michigan

SPECIFIC DATA ABOUT THIS AWARD

Award Date: April 1, 1971
Project Cost: $147,355

Completion Date: February 28, 1973
Federal Cost: $ 99,085

DESCRIPTION OF PROJECT

The project involves development and demonstration of soil treatment systems for dairy and swine wastes. A modified aerobic zone will be used for phosphorus precipitation by adding limestone or slag to the soil. A layered anaerobic zone will be employed for denitrification. The entire system will be underlain by plastic barrier and drain tiles and will be landscaped in roughage grasses. This system, "Barriered Landscape Water Renovation System" is one of the first comprehensive methods attempting to utilize small engineered land areas for tertiary treatment of liquid animal wastes which will allow recovery and reuse of the treated wastewater.

Project Officer: Mr. Lynn R. Shuyler
Treatment And Control Research Program
Robert S. Kerr Water Research Center
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-800287

TITLE OF PROJECT: Hydrolyzing Poultry Manure for Recycle as Feed Supplement

GRANTEE:
B. J. Nutrients, Inc.
3022 N. W. Expressway #310
Oklahoma City, Oklahoma 73112

PROJECT DIRECTOR:
John Baccarini
1721 S. W. 15th
Oklahoma City, Oklahoma 73108

Project Site: Tru-Fresh Farms, P. O. Box 190, Jones, Oklahoma 73049

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	January 1, 1972	**Project Cost:**	$174,441
Completion Date:	December 31, 1973	**Federal Cost:**	$ 97,500

DESCRIPTION OF PROJECT

The proposed project intends to demonstrate the application of conventional rendering techniques to the poultry wastes generated from a 175,000 laying hen operation. The existing system for disposing of the 50,000 lbs. of wet manure generated per day consists of trucking (12 loads per day) to adjacent farm lands for spreading at an estimated net cost of $57.00 per day. After installation of the proposed system the manure will be cooked/hydrolyzed in a steam cooker, dried in a rotary kiln, ground, and used as a feed supplement for poultry. It is claimed that hydrolyzing will increase the available protein by about 50 percent and result in an 80 percent digestibility factor. Manure age, and process variables (cooking time, temperature, pressure, etc.) will be varied to determine the optimum end-product quality. Feeding trials and subsequent autopsy analyses will run concurrently to evaluate feed value and residue effects. Stack gas analyses on the emissions from the incinerator and water analyses on the effluent from the condensers will be completed routinely. An economic study of the system will be included for comparison with alternate waste management systems and feed supplement sources.

Project Officer: Mr. Lee A. Mulkey
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b Demonstration
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 800302

TITLE OF PROJECT: Feedlots/Affected/Environment, Ration/Animal Management

GRANTEE:
Gulf Coast Development Corporation
Box 226
Bay St. Louis, Mississippi 39520

PROJECT DIRECTOR:
Dr. Billy G. Diggs
Gulf Coast Development Corporation
P. O. Box 226
Bay St. Louis, Mississippi 39520

Project Site: Hazelhurst, Mississippi

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 1, 1972	**Project Cost:**	$957,820
Completion Date:	May 31, 1974	**Federal Cost:**	$481,220

DESCRIPTION OF PROJECT

This project is designed to demonstrate the effect of (1) feed roughage concentration, (2) confinement housing facility type, and (3) animal density, on wastes management systems, costs, and beef cattle feed/gain efficiencies.

The project will require 24 months of continuous operation and be conducted in three phases with repeated feed cycles, as outlined above. Three different waste management schemes will be evaluated in each phase, based on (1) wastes mixed with rainfall runoff, (2) slurry wastes from slotted and paved floors, and (3) solid wastes.

Project Officer:

Lynn R. Shuyler
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

21 AOZ-03

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6(b)
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-800767 (13040 HHI)

TITLE OF PROJECT: Design Parameters for Animal Waste Treatment Systems

GRANTEE:
Cornell University
New York State College of
Agriculture and Life Sciences
Ithaca, New York 14850

PROJECT DIRECTOR:
Dr. Raymond C. Loehr
Director, Environmental Studies

Project Site: Ithaca, New York

SPECIFIC DATA ABOUT THIS AWARD

Award Date: December 1, 1972

Completion Date: July 1, 1973

	FY 73	Total
Project Cost:	$163,957	$422,793
Federal Cost:	$106,586	$273,279

DESCRIPTION OF PROJECT

A coordinated evaluation will be made of aerobic treatment and land disposal of treated and untreated animal wastes. Poultry and dairy wastes will be studied. Specific objectives and tasks will be developed through two separate but interdependent concurrent phases. Phase I will include development of engineering and economic design specifications for aerobic treatment to remove organics and nutrients. Phase II will include development of land disposal criteria under varying waste application rates and agronomic practices.

Project Officer:
Mr. Lee A. Mulkey
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6 (b) Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-800863

TITLE OF PROJECT: Demonstration of Aeration Systems for Poultry Wastes

GRANTEE:
Manocrest Farms
5322 Munro Road
Camillus, New York 13031

PROJECT DIRECTOR:
Mr. Earl Hudson
Manocrest Farms

Project Site: Camillus, New York

SPECIFIC DATA ABOUT THIS AWARD

Award Date: December 15, 1972

Project Cost: $55,882

Completion Date: December 14, 1973

Federal Cost: $35,000

DESCRIPTION OF PROJECT

An aerobic biological waste treatment system for treating poultry wastes will be demonstrated at a commercial egg laying operation. Two oxidation ditch systems will be installed, operated and evaluated. Odor and water pollution abatement resulting from the systems will be determined along with the development of detailed cost data, operational procedures and ultimate land disposal schedules.

Project Officer: Mr. Lee A. Mulkey
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

21-APD-06

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-800925 (13040 DAT)

TITLE OF PROJECT: Demonstration and Development of Facilities for the Treatment and Ultimate Disposal of Cattle Feedlot Wastes

GRANTEE:	PROJECT DIRECTOR:
Kansas State University Manhattan, Kansas	Dr. Harry Manges Kansas State University Manhattan, Kansas

Project Site: Pratt, Kansas

SPECIFIC DATA ABOUT THIS AWARD

			FY 73	Total
Award Date:	May 1, 1972	Project Cost:	$75,402	$277,115
Completion Date:	April 30, 1973	Federal Cost:	$49,718	$186,326

DESCRIPTION OF PROJECT

Characterize cattle manure that is removed from the surface of feedlots under conditions that are typical to the commercial cattle feeding industry.

Characterize stormwater runoff as it flows from lots and while it is held in an anaerobic storage lagoon.

Determine the effectiveness, design criteria, engineering and agronomic problems, and related costs of a pollution control system involving land disposal of solid manure and stormwater runoff from large, concentrated beef cattle feeding operations.

Project Officer: Dr. Dave M. Farmer
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

21 APA-09

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5 Research
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 801065

TITLE OF PROJECT: "Conversion of Cattle Feedlot Wastes to Ammonia Synthesis Gas"

GRANTEE:
Water Resources Center
Texas Tech University
P. O. Box 4630
Lubbock, Texas 79409

PROJECT DIRECTOR:
Dr. J. E. Halligan
Department of Chemical Engineering
Texas Tech University
P. O. Box 4679
Lubbock, Texas 79409

Project Site: Same as above.

SPECIFIC DATA ABOUT THIS AWARD

Award Date: October 12, 1972
Project Cost: $49,910

Completion Date: September 11, 1973
Federal Cost: $23,960

DESCRIPTION OF PROJECT

This study will determine the technical and economic feasibility of abating cattle feedlot pollution by converting cattle manure into synthesis gas to be used for subsequent ammonia production. Manure samples will be solicited from several feedlots to determine design values for the following parameters: (1) heat of combustion, (2) composition, (3) moisture content, (4) heat capacity data, (5) projected equilibrium yields. If severe operational conditions are not indicated, bench-scale investigations utilizing a self-constructed or rented reactor will be made in the laboratory. The data obtained from these investigations will be used to formulate a process design.

Project Officer:

R. Douglas Kreis
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

21 APB-04

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R-801125 (13040 EOL)

TITLE OF PROJECT: "Automated System for Water Pollution Control from an Animal Production Unit"

GRANTEE:
Ohio State University
Columbus, Ohio 43210

PROJECT DIRECTOR:
Dr. E. Paul Taiganides
Agricultural Engineering Department
The Ohio State University
2073 Neil Avenue
Columbus, Ohio 43210

Project Site: Columbus, Ohio

SPECIFIC DATA ABOUT THIS AWARD

			FY 72	Total
Award Date:	April 1, 1972	**Project Cost:**	$56,818	$147,948
Completion Date:	September 31, 1973	**Federal Cost:**	$43,050	$100,170

DESCRIPTION OF PROJECT

The specific objectives of the project are: (1) to demonstrate to animal producers the type of waste treatment unit operations which could be used to process wastes from animal production units, (2) to demonstrate a system of automated handling of animal wastes, (3) to demonstrate an animal waste treatment system which would not create a public nuisance and whose effluent could be of such quality that it could not contribute to water pollution.

The wastes from a 500-pig confinement unit will be flushed into a settling tank. The supernatant of the tank will be processed by aeration in an oxidation ditch, clarified, chlorinated and recirculated through the animal building as flushing water. The solids settled out of the settling tank will be stored in a storage tank which will have a capacity of 90-day detention time. The solids will then be disposed by field spreading.

Project Officer: Mr. Eugene Harris
National Environmental Research Center
Environmental Protection Agency
4676 Columbia Parkway
Cincinnati, Ohio 45268

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5 Research
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 801454

TITLE OF PROJECT: "A Method for Dissemination of Animal Waste Management Technical Information"

GRANTEE:
School of Environmental Science
East Central State College
Ada, Oklahoma 74820

PROJECT DIRECTOR:
Dr. Ralph Ramsey, Asst. Director
School of Environmental Science
East Central State College
Ada, Oklahoma 74820

Project Site: Same as above.

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	October 12, 1972	**Project Cost:**	$51,451
Completion Date:	October 12, 1973	**Federal Cost:**	$42,514

DESCRIPTION OF PROJECT

The purpose of the project is to gather published material related to management and pollution control of livestock, poultry, and fish wastes, to abstract this material, and to make it available to potential users. Related publications will be gathered through an exclusive search of information sources and through cooperation efforts of experts at agricultural universities. Abstracts will be submitted to the Water Resources Scientific Information Center (WRSIC) and will be published in Selected Water Resource Abstracts. In addition, a computer generated bibliography of all abstracted material will be made available to EPA for publication on a yearly basis.

Project Officer:

R. Douglas Kreis
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER 21 AOY-09

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Demonstration
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: S-801647 (formerly 13040 HPV)

TITLE OF PROJECT: "Liquid Aerobic Composting of Cattle Waste and Evaluation of By-products"

CONTRACTOR:	PROJECT DIRECTOR
Chino Basin Municipal Water District P. O. Box 697 Chino, California 91710	Dr. G. N. Tyson, Jr. TNCC, 425 Green Street Pasadena, California 91101

Project Site: Tollerup Farms, Corona, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 21, 1972	Project Cost:	$100,000
Completion Date:	June 20, 1973	Federal Cost:	$ 70,000

DESCRIPTION OF PROJECT

The primary objective of the study is to demonstrate the technical and economic feasibility of treating livestock wastes by means of a sequential thermophilic-mesophilic aerobic stabilization process to produce (1) an innocuous, settleable humus with ion-sequestering ability suitable as a soil conditioner, and (2) a nearly odor-free, pathogen-free supernatant usable for irrigation or flushing.

The digestions will be carried out in bench scale vessels with fresh wastes collected and processed on-site. Process parameters needed for construction of a mathematical model will be measured and a usable computer model of the process will be attempted. In addition, the amount of heat generated by the process will be measured to determine if it is self-sustaining. From the bench scale experiments, design data and operating requirements for a plant capable of treating wastes from 500 head of cattle will be developed and estimates of the economics of this system made.

Project Officer:

Lynn R. Shuyler, T&C
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

21 APA-11

DIRECT INQUIRIES TO PROJECT OFFICER

EPA Hq Form 5330-2 (6-72)

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R-801662

TITLE OF PROJECT: Pollution Aspects of Catfish Production - Review and Projections

GRANTEE:
University of Georgia
Athens, Georgia 30601

PROJECT DIRECTOR:
Dr. Jerry Chesness
Agricultural Engineering Department
University of Georgia
Athens, Georgia 30601

Project Site: Athens, Georgia

SPECIFIC DATA ABOUT THIS AWARD

Award Date: December 11, 1972

Project Cost: $ 38,742

Completion Date: December 10, 1973

Federal Cost: $ 32,900

DESCRIPTION OF PROJECT

A state-of-the-art review of the commercial catfish production industry will be made to determine the production of waterborne wastes and its ultimate disposition. Existing data and available literature will be collected and supplemented by detailed field surveys to establish a data base for defining pollution control needs, standard waste loads, and industrial waste treatment practices.

Project Officer:
Mr. Lee A. Mulkey
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6(b)
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-802182

TITLE OF PROJECT: "Demonstration of the Handling, Dehydrating and Utilization of Poultry Excreta

GRANTEE:
Michigan State University
East Lansing, Michigan 48823

PROJECT DIRECTOR:
Dr. Howard C. Zindel
Poultry Science Department
Michigan State University
East Lansing, Michigan 48823

Project Site: East Lansing, Michigan

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	March 1, 1973	**Project Cost:**	$186,258
Completion Date:	February 28, 1975	**Federal Cost:**	$130,195

DESCRIPTION OF PROJECT

The project includes the development and demonstration of a complete system of pollution control for poultry production wastes through a multi-phase drying system followed by produce recycle as a feed ingredient. A complete evaluation of the economic and engineering feasibility will be made as well as detailed studies of the refeeding phase. The effects and cyclic buildup of feed additives in the manure, processed product, and animal tissues will be noted during extensive nutritional studies. Design criteria for similar systems can then be developed to optimize the pollution control system within the constraints of public health requirements.

Project Officer: Mr. Lee A. Mulkey
Southeast Environmental Research Laboratory
Environmental Protection Agency
College Station Road
Athens, Georgia 30601

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6(b)
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-802197

TITLE OF PROJECT: Demonstration of Beef Feedlot Waste Management Systems

GRANTEE:
Mr. Larry P. Schram
L. P. Schram Feedlot, Inc.
Route 1
Papillion, Nebraska 68046

PROJECT DIRECTOR:
Mr. Larry P. Schram

Project Site: Papillion, Nebraska

SPECIFIC DATA ABOUT THIS AWARD

Award Date:

Project Cost: $125,822

Completion Date:

Federal Cost: $ 86,435

DESCRIPTION OF PROJECT

This two year study is designed to demonstrate the concept of porous dams in series with settling and detention ponds for solids removal and partial stabilization of cattle feedlot runoff. Analyses will be made of the economic feasibility of these waste management concepts as affected by cropland disposal by irrigation of stabilized manure and by general feedlot management and design factors.

The project will also entail evaluation of the efficiency of these waste management systems in terms of organics and nutrients removal, and in terms of dissolved and suspended solids removal.

Project Officer: Mr. Lynn R. Shuyler
Robert S. Kerr Environmental Research Laboratory
Environmental Protection Agency
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: S-802203 (13040 GDD)

TITLE OF PROJECT: "Design Criteria for Swine Waste Treatment Systems"

GRANTEE:
North Carolina State University
Raleigh, North Carolina 27607

PROJECT DIRECTOR:
Dr. Frank Humenik
Dept. of Biological & Agricultural Engineering
North Carolina State University
Raleigh, North Carolina

Project Site: Raleigh, North Carolina

SPECIFIC DATA ABOUT THIS AWARD

			FY 73	Total
Award Date:	December 1, 1972	**Project Cost:**	$70,718	$158,495
Completion Date:	November 30, 1973	**Federal Cost:**	$49,972	$118,679

DESCRIPTION OF PROJECT

The specific objective of this research is to provide specific information on the performance of model field treatment systems with the view of developing design criteria applicable throughout the Southeast for anaerobic lagoons, series lagoons, aerated lagoons and plant-soil filters. A further objective will be to evaluate and correlate with BOD additional analyses necessary for the development of sound criteria for evaluation and design of animal waste treatment facilities.
This study will be divided into two one-year portions. During the first year five unaerated lagoon treatment systems will be studied. Depending upon the results of the first year portion, several of these lagoons will be aerated during the second year and plant-soil filters added as a method for final treatment of the effluent.

Project Officer: Lynn R. Shuyler
EPA-RSKERL
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: R-802205

TITLE OF PROJECT: "Survival of Pathogens in Animal Manure Disposal"

GRANTEE:
University of Minnesota
St. Paul, Minnesota 55101

PROJECT DIRECTOR:
Dr. Stanley L. Diesch
Dept. of Veterinary Microbiology & Public Health
University of Minnesota
St. Paul, Minnesota 55101

Project Site: St. Paul & Rosemount, Minnesota

SPECIFIC DATA ABOUT THIS AWARD

Award Date: February 15, 1973
Completion Date: February 14, 1974
Project Cost: $73,075
Federal Cost: $69,195

DESCRIPTION OF PROJECT

The objectives of this project are to:

1. To determine from laboratory studies the potential mechanical dissemination of leptospires and salmonellae from the manure of a model oxidation ditch and the public health significance thereof.
2. To measure the infectivity of pathogen-contaminated feed recycled from the manure of the oxidation ditch.
3. To sample environmental aerosols created by field oxidation ditch-beef confinement housing unit in a quantitative and qualitative manner in order to determine the public health significance of such emissions.
4. To utilize relationships between temperature, loading rates, and degradation of manure in a model oxidation ditch to develop design of the oxidation ditch.

Project Officer: Dr. Shao Chang Yin
Robert S. Kerr Environmental Research Laboratory
Environmental Protection Agency
P. O. Box 1198
Ada, Oklahoma 74820

DIRECT INQUIRIES TO PROJECT OFFICER

21-ARS-02

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5 Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 802342

TITLE OF PROJECT: ANCA-EPA Joint Conference on Feedlot Waste Management

GRANTEE:	**PROJECT DIRECTOR:**
American National Cattlemen's Association (ANCA) P. O. Box 569 Denver, Colorado 80201	Mr. George S. Spencer Executive Vice President American National Cattlemen's Association

Conference Site: Denver, Colorado

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	**Project Cost:** $55,000
Completion Date:	**Federal Cost:** $32,000

Project Period: 7 months

DESCRIPTION OF PROJECT

With a number of EPA sponsored research, development and demonstration projects nearing completion, a joint ANCA-EPA National Conference will be undertaken as a means of communicating the results of these projects and other current information concerning animal feedlot waste management among feedlot operators and owners, cattle feeder organizations, consulting engineers, and researchers. It is intended that this Conference be so organized as to be attractive to all levels of the feeding industry, i.e. - "Family-farm" feeders through large scale commercial feedlots.

Project Officer: Mr. Lynn R. Shuyler
Robert S. Kerr Environmental Research Laboratory
Environmental Protection Agency
P. O. Box 1198
Ada, Oklahoma 74820
(405) 332-8800 x302

DIRECT INQUIRIES TO PROJECT OFFICER

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 13040 WRW

TITLE OF PROJECT: "Dissemination of Wastes Management Information on Cattle Feedlots"

GRANTEE:
Robert S. Kerr Environmental
Research Laboratory
In-House Project

PROJECT DIRECTOR:
Lynn R. Shuyler
Robert S. Kerr Environmental
Research Laboratory
P. O. Box 1198
Ada, Oklahoma 74820

Project Site:

SPECIFIC DATA ABOUT THIS AWARD

Award Date:

Project Cost: $9,744

Completion Date:

Federal Cost:

DESCRIPTION OF PROJECT

Analyze current cattle feedlot waste management alternatives and present seminars on design to selected individuals in various cattle feeding areas of the United States.

21 AOY-10

EPA Hq Form 5330-1 (6-72)

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 13040 WSA

TITLE OF PROJECT: "Establish Field Facility for Cattle Feedlot Waste Management Research"

GRANTEE:
Robert S. Kerr Environmental
Research Laboratory
In-House Project

PROJECT DIRECTOR:
Lynn R. Shuyler
Robert S. Kerr Environmental
Research Laboratory
P. O. Box 1198
Ada, Oklahoma 74820

Project Site:

SPECIFIC DATA ABOUT THIS AWARD

Award Date:		**Project Cost:**	
Completion Date:		**Federal Cost:**	$1,000.00

DESCRIPTION OF PROJECT

Establish a full-scale cattle feedlot facility where wastes management research can be conducted under complete environmental control.

21 AOZ-01

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly an In-House Project Under Section 6 *Federal Water Pollution Control Act, As Amended*

PROJECT NUMBER: 16080, 13040 RBQ

TITLE OF PROJECT: "Soil Treatment of Runoff from Beef Cattle Feedlots"

IN-HOUSE LABORATORY:
Robert S. Kerr Environmental
Research Laboratory
Ada, Oklahoma 74820

PROJECT DIRECTOR:
R. E. Thomas
Robert S. Kerr Environmental
Research Laboratory
P. O. Box 1198
Ada, Oklahoma 74820

Project Site: A 12,000-head capacity feedlot located near McKinney, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June, 1969

Completion Date:

Project Cost: $52,600

Federal Cost: $52,600

DESCRIPTION OF PROJECT

Evaluate a spray-runoff treatment process for treating cattle feedlot rainfall runoff a produce an effluent satisfactory for stream discharge.

EPA Hq Form 5330-1 (6-72)

DIRECT INQUIRIES TO PROJECT OFFICER

21 APA-02

TRANSPORTATION SOURCES
PROGRAM ELEMENT 1B2038
(FORMERLY 15010 & 15020)

Up until the present time efforts under this element have primarily been devoted to Watercraft Wastes. These wastes include sanitary wastes, oils, litter, bilge water, wash waters, chemicals, and cargo spills. The sources of these wastes include 110,000 commercial vessels, 1500 federally operated craft and an estimated 6,000,000 recreational craft. Pollution from watercraft is most severe in bays, inlets, harbors, and in the vicinities of harbors. The pollutants may cause disease in man, may damage or destroy aquatic life and waterfowl, and may make water unsightly and generally lower its utility for other legitmate purposes. The growing popularity of watercraft for recreational purposes has increased and will continue to increase the significance of watercraft as a source of pollution. Recreational craft may discharge sanitary wastes in swimming areas, over potable water intakes and over shellfish beds. Current "on-board" technology and shoreside supporting facilities at marinas and ports are generally inadequate or non existent.

Included also in this element is the development of technology for the prevention or control of water pollution generated by recreational activities. The number of people using bathing beaches, picnic grounds, camping areas and ski resorts is increasing each year. As a result waste disposal facilities are generally inadequate. Present waste treatment systems at recreational areas have been limited either to ineffective septic tank systems or other primitive systems. These systems are unable to adjust to heavy weekend shock loadings and to seasonal usage wherein they must move from a dormant stage to an operational stage quickly. Also, since water supply may be in short supply at remote areas, systems are required that are conservative of water or allow reuse.

Because public health is a prime consideration most of the resources available to this element have been channeled, to date, into developing technology necessary to prevent pollution from sanitary wastes.

RECREATION

Preceding page blank

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended (PL 91-224)

PROJECT NUMBER: 15010 PBK

TITLE OF PROJECT: "Demonstration of Non-Aqueous Sewage Disposal System for Recreational and Remote Areas"

GRANTEE:

Black Hills Conservancy
Sub-District
P. O. Box 1692
Rapid City, South Dakota 57701

PROJECT DIRECTOR:

Floyd L. Matthew
4635 Wentworth Drive
Rapid City, South Dakota 57701

Project Site: Rapid City, South Dakota

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 1971

Project Cost: $89,756

Completion Date: March 30, 1973

Federal Cost: $75,213

DESCRIPTION OF PROJECT

The objective of this project is to demonstrate the feasibility and effectiveness of using a compact, closed-loop, non-aqueous system for collecting, transporting and disposing of domestic waste at remote and recreational areas where conventional methods of disposal are undesirable because of the need to protect recreational and underground waters and in areas where water is in short supply. It will be demonstrated that water conservation can be achieved by using a non-aqueous flush media. The system will be demonstrated and evaluated during both winter and summer seasons at a facility serving the recreation and tourist industry. The physical, biological, chemical and aesthetic characteristics of the flush media will be demonstrated.

Specific technical data to be determined and evaluated includes:

1. Data on the useful life of the flush media.
2. Per capita waste loading to establish future design criteria.
3. Effectiveness of the incineration process.
4. Operational maintenance and reliability data to project optimum operational techniques and procedures.

Project Officer: W. J. Librizzi
Edison Water Quality Research Laboratory
Environmental Protection AGency
Edison, New Jersey 08817

Preceding page blank

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15010 HLZ

TITLE OF PROJECT: "Recirculating Catalytic Oxidation Waste Treatment Systems"

GRANTEE:

Grand Targhee Resort, Inc.
P. O. Box 117
Driggs, Idaho 83422

PROJECT DIRECTOR:

P. D. Nance
Thiokol Chemical Corp.
Wasatch Div., P. O. Box 524
Brigham City, Utah 84302

Project Site: Alta, Wyoming

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 25, 1971

Completion Date: June 30, 1974

Project Cost: $81,032

Federal Cost: $45,098

DESCRIPTION OF PROJECT

This project will develop and demonstrate a non-biological waste treatment system which eliminates the organic wastes in sewage and makes the water suitable for reuse in flushing toilets, thus obviating the necessity for a water supply for waste disposal. To demonstrate the performance of the developed system, it will be installed at the top of Fred's Mountain (10,400 feet elevation), Alta, Wyoming, to treat the sanitary sewage generated by the customers and employees of a restaurant located there. The restaurant will have a seating capacity of 60 and is expected to serve as many as 500 customers per day. An estimated 1,500 gal/day of sanitary wastes will be treated. Treated wastes will have less than 50 mg/1 of BOD_5, less than 50 mg/1 of suspended solids, and less than 100 MPN of coliform organisms per 100 ml.

Project Officer: W. J. Librizzi
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 89-753)

PROJECT NUMBER: 15010 DSZ

TITLE OF PROJECT: "Pollution Control of Bathing Beaches by Use of a Pneumatic Curtain"

CONTRACTOR:

National Pollution Control Foundation
866 U. N. Plaza, Room 423
New York, New York 10017

Project Site: Springdale, Conn.

PROJECT DIRECTOR

Dr. Raymond J. Moshy
Staff V. P. & Director-Research
American Machine & Foundry Co.
869 Hope
Springdale, Connecticut

SPECIFIC DATA ABOUT THIS AWARD

Award Date: May 6, 1968

Completion Date: October 1969

Project Cost: $265,584

Federal Cost: $197,463

DESCRIPTION OF PROJECT

This project was to determine the feasibility of reducing water pollution in tidal beach areas by using aeration/chlorination system.

The aeration did not exhibit any appreciable reduction in pollution. The chlorination, as expected, reduced the pollution. However, the chlorine demand of the bottom deposits, and the chlorine removal by the changing tides, indicated the costs would be excessive.

WATERCRAFT WASTES

Preceding page blank

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 91-224).

PROJECT NUMBER: 15020 HJM

TITLE OF PROJECT: "Recreational Water Craft Waste Treatment System"

CONTRACTOR:
Ametek, Inc.
Los Angeles, California

PROJECT DIRECTOR
S. E. Summers

Project Site: Los Angeles, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1971

Completion Date: March 30, 1973

Project Cost: $119,700

Federal Cost: $119,700

DESCRIPTION OF PROJECT

The objective of this program is to design, develop and demonstrate a compact, simple to operate, reliable and relatively maintenance free physical-chemical waste treatment system for recreational watercraft.

The unique feature of the proposed system is the incorporation of the combined processes of in-depth filtration and carbon adsoprtion in a moving bed. An electrically driven, variable pitch screw shaft moves the filtration/adsorption mixed media on an intermittant basis. The active zone of the unit is replenished periodically with fresh media while the spent media is wasted to a storage canister which requires emptying once per boating season.

Project Officer: W. J. Librizzi
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

EPA Hq Form 5330-2 (6-72)

Preceding page blank

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 *Federal Water Pollution Control Act, As Amended.* (PL 91-224)

PROJECT NUMBER: 15020 GPC

TITLE OF PROJECT: "Analysis of Pollution from Marine Engines and Effects on the Environment"

CONTRACTOR:	**PROJECT DIRECTOR**
Boating Industry Association 401 North Michigan Avenue Chicago, Illinois 60611	Mr. Matt Kaufman Boating Industry Association 401 North Michigan Avenue Chicago, Illinois 60611

Project Site: Chicago, Illinois

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	April 13, 1971	**Project Cost:**	$428,348
Completion Date:	June 30, 1973	**Federal Cost:**	$199,220

DESCRIPTION OF PROJECT

The objective of this project is to obtain sufficient laboratory and field data to be able to predict the number of outboard engines which can be operated on any particular body of water without causing adverse effects on the aquatic environment. The project is divided into two phases. The first phase will assess the extent of ecological disturbance caused by the operation of outboard motors and will determine the affect on the aquatic system food chain. This phase will be conducted in natural aquatic systems in both northern and southern climates. The second phase consists of a laboratory investigation to identify and quantify the major components of submerged exhaust emission from outboard engines variations due to engine horsepower, manufacturers design, engine age and maintainence.

Project Officer: L. T. McCarthy
Ediwon Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 *Federal Water Pollution Control Act, As Amended.* (PL 91-224)

PROJECT NUMBER: 15020 GYH

TITLE OF PROJECT: "Marine Sanitation System Demonstration"

CONTRACTOR:

Delaware River & Bay Authority
P. O. Box 71
New Castle, Delaware

PROJECT DIRECTOR

Mr. F. L. Kaminsky
Marland Environmental Systems, Inc.
150 Stafford Rd.
Wayne, Pennsylvania 19087

Project Site: Lewes, Delaware

SPECIFIC DATA ABOUT THIS AWARD

Award Date: May 1, 1971

Completion Date: Feb. 28, 1973

Project Cost: $185,817

Federal Cost: $138,630

DESCRIPTION OF PROJECT

The objective of this project is to demonstrate a physiochemical marine sanitation system capable of producing an effluent having characteristics equivalent to a high level of secondary treatment. The vessel selected for the demonstration is a ferry operating between Cape May, New Jersey and Lewes, Delaware. The proposed process utilizes a centrifuge to separate the solids from the liquid waste followed by a series of carbon adsorption columns to remove the remaining organic contaminants. The liquid effluent from the system can be discharged overboard. The solids remaining will be collected onboard and will be disposed of onshore once each week.

Project Officer: W. J. Librizzi
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 91-224)

PROJECT NUMBER: 15020 HJL

TITLE OF PROJECT: "Device for On-Board Treatment of Wastes from Vessels"

CONTRACTOR:

General American Transportation Corp.
7448 North Natchez Avenue
Niles, Illinois 60648

PROJECT DIRECTOR

G. Remus

Project Site: Niles, Illinois

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1971

Completion Date: March 30, 1973

Project Cost: $137,800

Federal Cost: $137,800

DESCRIPTION OF PROJECT

This project is to design, fabricate and test a system for treating sanitary and galley wastes from vessels with a 6 to 20 man crew.

The unique feature of the proposed system is the incorporation of a hydrophilic filter consisting of a screen and "sponge" to accomplish solids-liquid separation.

A Phase I, 9 months period is included for development of full-scale system and laboratory testing. A Phase II period includes installation on board a vessel for performance testing.

Project Officer: D. J. Cesareo
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended. (PL 91-224)

PROJECT NUMBER: 15020 HJI

TITLE OF PROJECT: "Development and Demonstration of Devices for On-Board Treatment of Wastes from Vessels"

CONTRACTOR:	**PROJECT DIRECTOR**
AWT Systems, Inc. 910 Market Street Wilmington, Del. 19899	W. Johnson

Project Site: Cumberland, Maryland

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1971 **Project Cost:** $223,125

Completion Date: August 30, 1973 **Federal Cost:** $223,125

DESCRIPTION OF PROJECT

This project is to design, develop and demonstrate a compact modular system for all wastes from pleasure craft. The system utilizes pressure filtration, carbon adsorption, incineration and vapor phase catalytic and chlorination oxidation. The components of the system can be designed such that a treatment device may consist of from one to four modules, depending on space and weight limitation of vessels. Phase I, the laboratory phase, will consist of developing and testing the individual components. Following the lab phase, a prototype system will be assembled for vessel installation and demonstration.

Project Officer: B. Hornstein
Edison Water Quality Research Laboratory
Environmental Protection AGency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 91-224)

PROJECT NUMBER: 15020 HJG

TITLE OF PROJECT: "Devices for On-Board Treatment of Wastes from Vessels"

CONTRACTOR:
Thiokol Chemical Corporation
Wasatch Division
Brigham City, Utah 84302

PROJECT DIRECTOR
Paul D. Nance, Manager
Advanced Pollution Control
Systems

Project Site: Brigham City, Utah

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1971

Project Cost: $150,768

Completion Date: August 30, 1973

Federal Cost: $150,768

DESCRIPTION OF PROJECT

The objective is to design, develop and test a compact, low-cost, highly reliable waste treatment system for sanitary vessel waste with a crew compliment of 10 men. Emphasis on adaptability of the proposed design to both smaller and larger pleasure craft will be included.

The proposed system employs the unique feature of a filter/incinerator developed by Thiokol. As reported by Thiokol for the system performance, the effluent contains less than 50 mg/l of suspended solids and Biochemical Oxygen Demand (BOD) and less than 240 MPN/100 ml. of coliform. This quality would more than satisfy the stated objectives of the RFP.

A seven month Phase II demonstration on board a houseboat is proposed after the Phase I development.

Project Officer: L. T. McCarthy
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 91-224)

PROJECT NUMBER: 15020 HJJ

TITLE OF PROJECT: "Device for On-Board Treatment of Wastes from Vessels"

CONTRACTOR:	**PROJECT DIRECTOR**
Fairbanks Morse, Inc. Research Center Beloit, Wisconsin	W. C. Fisher

Project Site: Beloit, Wisconsin

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 30, 1971	**Project Cost:**	$247,503
Completion Date:	June 30, 1973	**Federal Cost:**	$247,503

DESCRIPTION OF PROJECT

The objective of this program is to design, develop and demonstrate a sanitary waste treatment device for a crew size of 25, but applicable design changes can expand the treatment capability to 20 to 50 man crew sizes.

The unique feature of the proposal is the inclusion of separate distinct systems for treating urine and toilet stools.

The urinal system utilizes effluent from carbon columns as a recirculatory flush media.

The treatment of sewage from toilet stools will also be handled in a recirculating system. Solids will be separated in this system by gimbal mounted filter paper. Solid waste generated, including filter paper and spent carbon, will be incinerated.

Project Officer: D. J. Cesareo
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08317

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 91-224)

PROJECT NUMBER: 15020 HJN

TITLE OF PROJECT: "Devices for On-Board Treatment of Wastes from Vessels"

CONTRACTOR:	**PROJECT DIRECTOR**
Gulf & Western Industrial Products Co. 101 Chester Road Swarthmore, Pennsylvania 19081	Donald Schantz

Project Site: Swarthmore, Pennsylvania

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 30, 1971	**Project Cost:**	$106,269
Completion Date:	March 30, 1973	**Federal Cost:**	$106,269

DESCRIPTION OF PROJECT

The objective of this project is to design, develop and demonstrate a compact, simple to operate, sanitary waste treatment system for handling 15 man days (3x5 or 5x3) of waste from existing marine heads before filter replenishment.

The Phase I development program is for experimental verification of the Clarke's Carbon treatment for sanitary waste followed by filtration. Reportedly, the system produces an effluent closely approaching drinking water quality. Any finely divided activated carbon will suffice, but superior performance is reported for the Clarke's Carbon system.

Phase II proposed installation and demonstration on a 34 foot sailing vessel.

Project Officer: B. Hornstein
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

- *This sheet describes briefly a contract under Section* 5 *Federal Water Pollution Control Act, As Amended.* (PL 91-224)

PROJECT NUMBER: 15020 FZS

TITLE OF PROJECT: "R/V ALCOA SEAPROBE Sewage Treatment Plant"

CONTRACTOR:	**PROJECT DIRECTOR**
Ocean Science & Engineering, Inc. 4905 Del Ray Avenue Washington, D. C. 20014	Wilbur G. Sherwood

Project Site: Sturgeon Bay, Wisconsin

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	October 27, 1970	**Project Cost:**	$49,089
Completion Date:	February 28, 1973	**Federal Cost:**	$33,669

DESCRIPTION OF PROJECT

The project is intended to demonstrate the effectiveness of a closed circuit recirculating flush system designed to preclude any overboard discharge from the sanitary facilities while the vessel is in port or in restricted waters. Involved is chemical treatment, separation of solids and recirculation of sterile flushing liquid.

Included is the modification of an existing design of an onboard sewage treatment plant to suit a special purpose vessel of 2000 tons displacement and 50 person crew.

Shipyard installation of the system and auxiliary equipment during construction of the ship; initial test and checkout of the plant; acquisition of operational data related to suitability of application; and final report are required. The report will present results, conclusions and recommendations covering installation efforts, operation aspects, costs, and chemical and biological effectiveness.

Project Officer: W. J. Librizzi
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

EPA Hq Form 5330-2 (6-72)

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 *Federal Water Pollution Control Act, As Amended.* (PL 91-224)

PROJECT NUMBER: 15020 HJK

TITLE OF PROJECT: "Development and Demonstration of a Device for On-Board Treatment of Wastes from Vessels"

CONTRACTOR:	**PROJECT DIRECTOR**
Ocean Systems, Inc. 11440 Isaac Newton Square North Reston, Virginia 22070	D. Bellovich

Project Site:

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1971 **Project Cost:** $194,590

Completion Date: August 30, 1973 **Federal Cost:** $194,590

DESCRIPTION OF PROJECT

The objective is to design, develop and test a compact, low-cost completely closed combustion toilet system based on the "store and burn" concept. The system is a one module unit that stores the daily wastes from a crew complement of 3 to 4 men for once a day incineration.

The system is vented to the atmosphere only. There are no effluent discharge lines for by-passing the system. Therefore, water pollution is precluded by the system design. An inert ash generated in the combustion process requires periodic disposal.

A shipboard Phase II demonstration is proposed for a period of 9 months following the 9 month Phase I development.

Project Officer: D. J. Cesareo
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended. (PL 91-224)

PROJECT NUMBER: 15020 HHQ

TITLE OF PROJECT: "Effects of Exhaust from Two Cycle Outboard Engines"

CONTRACTOR:	**PROJECT DIRECTOR**
Rensselaer Polytechnic Institute Troy, New York 12181	Dr. W. W. Shuster

Project Site: Lake George, New York

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	Juen 25, 1971	**Project Cost:**	$94,632
Completion Date:	June 30, 1973	**Federal Cost:**	$84,300

DESCRIPTION OF PROJECT

The proposed project would investigate levels of outboard engine discharges which include fuel, fuel additives, (e.g., lead) and fuel combustion products that exist under a variety of use patterns in an oligotrophic/mesotrophic lake as a function of time of year. Engine discharges associated with water surface, water column, sediments, and littoral zone will be measured and fingerprinted by gas chromatography. Studies will be made to correlate the levels and fingerprints of these products to primary productivity and consumer and decomposer activity. Furthermore, laboratory and field studies will be conducted establishing kinetics of removal via microbial, adsorptive and evaporative mechanisms for a loading estimate in terms of a boating hour index.

Project Officer: Dr. R. J. Nadeau
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

EPA Hq Form 5330-2 (6-72)

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 91-224)

PROJECT NUMBER: 15020 HJH

TITLE OF PROJECT: "Devices for On-Board Treatment of Wastes from Vessels"

CONTRACTOR:	**PROJECT DIRECTOR**
Westinghouse Electric Corporation 1801 K. Street, N. W. Washington, D. C. 20006	R. Chamberlain

Project Site: Pittsburgh, Pennsylvania

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 30, 1971	**Project Cost:**	$157,000
Completion Date:	June 30, 1973	**Federal Cost:**	$157,000

DESCRIPTION OF PROJECT

The objective of this project is to develop and test a small, reliable recirculating waste treatment system for small pleasure craft up to 26 feet in length. The system will be designed to treat the waste generated by four people and will fit into a space of 20 cubic inches.

All of the components, with the exception of an incinerator have been evaluated in Westinghouse Research Laboratories. The components of the proposed system include (1) a commode base, (2) a unique moving spring screen solid separator, (3) a liquid reservoir, (4) a solids incinerator and (5) a disinfecting/chemical treatment device.

The above components will be designed, fabricated and tested in the laboratory using human waste during Phase I. Phase II involves building, installing and testing the device aboard the MIDWIFE, mother ship for the Westinghouse Deepstar Submersibles.

Project Officer: W. J. Librizzi
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 91-224)

PROJECT NUMBER: 15020 HLY

TITLE OF PROJECT: "Catalytic Waste Treatment Systems for Great Lakes Ore Carriers"

CONTRACTOR:
Cleveland Cliffs Iron Co.
1460 Union Commerce Building
Cleveland, Ohio 44115

PROJECT DIRECTOR
Paul D. Nance
Thiokol Chemical Corporation
Wasatch Division, P.O. Box 524
Brigham City, Utah 48302

Project Site: Shipboard - "Cleveland Cliffs"

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 22, 1971

Project Cost: $245,151

Completion Date: July 30, 1973

Federal Cost: $128,218

DESCRIPTION OF PROJECT

The overall objective of this grant is to develop a physiochemical system of treating sanitary, galley, laundry, shower and wash basin wastes generaged on an ore carrier operating on the Great Lakes with a crew of 30 men. The proposal envisages using three subsystems. One subsystem, employing a proprietary catalytic -incinerator for solid liquid separation and solids reduction, and proprietary catalytic columns for dissolved solids removal and oxidation, would treat only sanitary wastes. The second subsystem, treating sanitary and galley wastes, would employ a centrifuge for solids, grease liquid separation; an incinerator for grease and solids reduction and catalytic columns for dissolved dolids removal and oxidation. The third subsystem would use electrolytic chlorination to sterilize shower, wash basin and laundry waste water. These three subsystems would be designed with appropriate holding tanks, recycling tanks and automatic controls to treat in excess of 2,900 gallons of waste water per day. After fabrication, the subsystems will be assembled on shore and tested before installation on board ship. Upon installation of the subsystems there would be a 90 day shipboard evaluation followed by a 6 months program to evaluate performance reliability. Effluent requirements for the proposed system would be less than 50 mg/l of suspended solids, less than 50 mg/l of BOD and less than 240 MPN of coliform organisms per 10 ml.

Project Officer: L. T. McCarthy
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 68-03-0160

TITLE OF PROJECT: "Development of Instrumentation for Monitoring Recreational Watercraft Sanitation Systems

GRANTEE:	**PROJECT DIRECTOR:**
Procedyne Corporation New Brunswick, New Jersey	Dr. R. A. Mostello

Project Site: New Brunswick, New Jersey

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	September 1972	**Project Cost:**	$124,079
Completion Date:	June 1974	**Federal Cost:**	$124,079

DESCRIPTION OF PROJECT

The objective of this program is to develop and demonstrate the technology for the effective monitoring of effluents from marine sanitation devices installed onboard recreational vessels. The instrument to be developed will use optical and amperometric principles for automatic monitoring at a pre-determined standard with provision to alert the boater and inspection personnel when suspended solids exceeds or total chlorine residual is less than the pre-determined standard. The instrument will be tamper proof, easily installed, capable of operating in salt, fresh and brackish flush systems, will be safe to operate and easy to maintain and will have an uninstalled first cost of less than $100.

The program includes engineering research to adapt existing instrument principles for suitable operation under shipboard conditions. A prototype instrument will be assembled and laboratory tested using a procedure that simulates the treatment of shipboard waste. The instrument will finally be installed on an EPA approved recreational vessel and a marine sanitation device for onboard testing over a 90 day period to establish reliability, maintenance and operating requirements and accuracy under actual field conditions.

Project Officer: W. J. Librizzi
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5 Federal Water Pollution Control Act, As Amended (PL 91-224)

PROJECT NUMBER: 68-03-0157

TITLE OF PROJECT: "Development of Instrumentation of Monitoring of Marine Sanitation Systems"

GRANTEE:	**PROJECT DIRECTOR:**
Houston Research, Inst. Houston, Texas	Dr. C. Mauk

Project Site: Houston, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	Sept. 15, 1972	**Project Cost:**	$74,548
Completion Date:	June 15, 1974	**Federal Cost:**	$74,548

DESCRIPTION OF PROJECT

The objective of this program is to develop and demonstrate the technology for the effective monitoring of effluents from marine sanitation devices installed onboard recreational vessels. The instrument to be developed will use optical and colorimetric principles for automatic monitoring at a pre-determined standard with provision to alert the boater and inspection personnel when suspended solids exceeds or total chlorine residual is less than the pre-determined standard. The instrument will be tamper proof, easily installed, capable of operating in salt, fresh and brackish flush systems, will be safe to operate and easy to maintain and will have an uninstalled first cost of less than $100.

The program includes engineering research to adapt existing instrument principles for suitable operation under shipboard conditions. A prototype instrument will be assembled and laboratory tested using a procedure that simulates the treatment of shipboard waste. The instrument will finally be installed on an EPA approved recreational vessel and a marine saniation device for onboard testing over a 90 day period to establish reliability, maintenance and operating requirements and accuracy under actual field conditions.

Project Officer: W. J. Librizzi
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended (PL 91-224)

PROJECT NUMBER: 15010 GZW

TITLE OF PROJECT: "Flora Filter for Wastewater Treatment"

GRANTEE:

Ohio Dept. of Natural Resources
Division of Water
Columbus, Ohio 44077

PROJECT DIRECTOR:

Mr. David Papier
Ohio Dept. of Natural Resources
Columbus, Ohio 44077

Project Site: Dillon and Delaware Reservoirs, Ohio

SPECIFIC DATA ABOUT THIS AWARD

Award Date: April 1, 1971

Project Cost: $154,568

Completion Date: March 30, 1973

Federal Cost: $77,329

DESCRIPTION OF PROJECT

This project is designed to demonstrate the use of urea-formaldehyde foam bluegrass sod land treatment system for effluents from package treatment plants at recreation areas. Foam is spread to 1 to 2 inch thickness, hydroseeded, and irrigated with domestic effluent. Sod matures more rapidly than usual and is harvested for use in the park, etc. Determinations of removal efficiencies for BOD, COD, nitrogen, phosphorus, and bacteria are included, and design and operating criteria for raw waste, primary and secondary effluents are to be specified.

Project Officer: E. Harris
National Environmental Research Center
Cincinnati, Ohio 45268

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 89-753)

PROJECT NUMBER: 14-12-522

TITLE OF PROJECT: "Treatment of Watercraft Wastes"

CONTRACTOR:	**PROJECT DIRECTOR**
General Electric Company 3198 Chestnut Street Philadelphia, Pennsylvania 19101	J. C. White

Project Site: Philadelphia, Pennsylvania

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	April 30, 1969	**Project Cost:**	$338,030
Completion Date:	Sept. 1, 1971	**Federal Cost:**	$338,030

DESCRIPTION OF PROJECT

This project shall consist of constructing and installing an actual operating waste treatment aboard a vessel. A subsequent study will involve measuring salinity effects, floatable residues, hydrogen gas generation, electrode optimization, grinding, holding, settling, and disfection using this installed **system**. The major emphasis of this program shall be devoted toward optimization and development of the electrocoagulation portion of the overall system.

The purpose of this program is to design, construct and operate the smallest size system, consistent with accomplishing the goals of determining capital and operating costs. After construction, tests shall be performed over a period of time consistent with performance during which changes in hydraulic loading, input conditions, control parameters, flow schemes and the like shall be programmed to fully evaluate the performance as a function of these and other significant variables. This system shall be designed and tested in both fresh and salt waters.

Project Officer: K. Jakobson
Environmental Protection Agency
Washington, D. C. 20460

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended (PL 89-753)

PROJECT NUMBER: 15020 ENN

TITLE OF PROJECT: "Control of Pollution from Outboard Engine Exhaust"

GRANTEE:	**PROJECT DIRECTOR:**
Rensselaer Polytechnic Institute Troy, New York 12181	Dr. W. W. Shuster

Project Site: Troy, New York

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	March 10, 1970	**Project Cost:**	$27,562
Completion Date:	June 1971	**Federal Cost:**	$26,104

DESCRIPTION OF PROJECT

In this project, it is proposed to investigate the effectiveness of a pollution control device in alleviating the impact of exhaust products from two-cycle outboard engines on natural water. This will involve the determination of output and distribution of two-cycle outboard engines exhaust products, its effect on water quality and the potential impact on the biological community in particular primary productivity.

The first phase will be studied in an enclosed tank of about 15 feet in diameter with maximum depth of 6 feet to provide a reasonable surface to volume ratio. Carbon balances will be made to determine the distribution of fuel in the air, in the surfaces of the water and tanks, and in the bulk of the water in the tanks, and in the bulk of the water in the tanks. The effect of incorporating lake muds into the system will be studied since sorption phenomena may be significant in terms of immediate removal and perhaps subsequent leaching.

Project Officer: Patrick M. Tobin
Edison Water Quality Research Laboratory
Environmental Protection AGency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 89-753)

PROJECT NUMBER: 15020 DHB

TITLE OF PROJECT: "Storage of Wastes from Watercraft and Disposal at Shore Facilities"

CONTRACTOR:

General Dynamics
Elec. Boat Div.
Eastern Point Road
Groton, Connecticut 06340

PROJECT DIRECTOR

H. M. Wallman,

Project Site: Groton, Conn.

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	March 14, 1969	**Project Cost:**	$32,569
Completion Date:	Jan. 13, 1970	**Federal Cost:**	$32,569

DESCRIPTION OF PROJECT

A waste impoundment system will be designed and constructed for use onboard an Electric Boat tug, The Three Duces. The design will minimize the waste water volume from the galley, and compact the wastes from all sources to be stored for shore disposal, For odor control the tank vent will contain an activated carbon canister.

Disposal of wasted will be demonstrated at a shore facility. Disposal techniques will include pumping the wastes to a dock side sewer connnection, to a small dock side treatment plant, or to a commercial septic tank truck.

Project Officer: Ernest G. Karvelis
Edison Water Quality Research Laboratory
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (PL 89-753)

PROJECT NUMBER: 15020 DFE

TITLE OF PROJECT: "Treatment of Watercraft Wastes from Small Vessels to Shore Treatment Facilities"

CONTRACTOR:	**PROJECT DIRECTOR**
Underwater Storage, Inc. Silver Schwartz, Ltd., Joint Venture 1028 Connecticut Avenue, N. W. Washington, D. C.	H. G. John Russell Project Manager Underwater Storage, Inc.

Project Site: Washington, D. C.

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	February 12, 1969	**Project Cost:**	$99,200
Completion Date:	September 2, 1969	**Federal Cost:**	$99,200

DESCRIPTION OF PROJECT

A technique will be demonstrated of reducing watercraft pollution by installing a holding device aboard small vessels and disposing of these wastes at the shore. Ten small vessels will be modified and equipped with holding devices. The wastes generated aboard each vessel will be kept in the holding tanks and disposed at a marina along the Anacostia River by pumping the wastes into a collection line. The amount of wastes that has entered the collection line will be metered and then stored in an underwater naylon storage tank. Septic tank trucks will remove the wastes from the underwater storage tank at least once a week.

Final report published: September 1969.

Project Officer: Patrick Tobin
Edison Water Quality Research Laboratory
Environmental Protection AGency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 *Federal Water Pollution Control Act, As Amended.* (PL 89-753)

PROJECT NUMBER: 15020 DGR

TITLE OF PROJECT: "Treatment of Boat Wastes"

CONTRACTOR:

Uniroyal, Inc.
Research Center
Wayne, New Jersey

PROJECT DIRECTOR

M. W. Olson

Project Site: Wayne, New Jersey

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	February 27, 1969	**Project Cost:**	$34,122
Completion Date:	August 1, 1970	**Federal Cost:**	$34,122

DESCRIPTION OF PROJECT

This project will consist of two phases, Phases I and II will be a feasibility and demonstration study for the use of flexible systems for waste storage on small watercraft.

Phase I: 1) The available space on a variety of small watercraft for locating a flexible waste collection system will be charged.

2) The economic feasibility and complexity of installing waste storage systems on watercraft will be examined.

3) A technical literature search will be conducted into methods used for filtering waste bearing solutions and other treatment operational details.

Phase II: 1) A mock-up of a boat section will be built that involves waste generating devices and space for a collection container

2) The most promising collection system will be fabricated

3) The system will be operated for demonstrating its effectiveness.

Project Officer: Ernest G. Karvelis
Edison Water Quality Research Laboratory
Environmental Protection AGency
Edison, New Jersey 08817

OIL & HAZARDOUS MATERIALS SPILLS
PROGRAM ELEMENT 1B2041
(FORMERLY 15080 & 15090)

Presently, an estimated 10,000 spills of oil and hazardous materials occur annually in the navigable waters of the Nation. Oil spills are expected to triple over the next 30 years as a result of increased production, transport, storage, and transfer. The production of hazardous materials is expected to increase by 73 percent in the next ten years. About 500 new chemicals are being developed and entered into commerce each year. "Spills" are distinguished as noncontinuous discharges of dumping which usually occur as a result of accidents, malfunctions of equipment, or human error. They also include discharges of oily ballast water, discharges from tank cleaning operations, convenience dumping of hazardous materials into sewers or the environment, and waste oil from crankcases and industrial uses. These accidential spills occur at inopportune times and locations, subjecting watercourses to varying degrees of hazards.

Damages caused by oil and hazardous material spills are both significant and diverse. Such pollution can destroy or limit marine life, ruin wildlife habitat, kill birds, limit or destroy the recreational value of beach areas, contaminate water supplies and create fire hazards. Major problems in the control of hazardous material spills in watercourses include the wide variation of substances, their reactivity problems, the persistence of materials and the immediate and long term effects. Materials spilled in watercourses may undergo physical and chemical change and may combine with other materials which affect and increase their toxicity.

The objective of the oil and hazardous material spill program is to develop equipment and processes for the prevention, control and clean-up of spills. While efforts must be directed toward prevention of spills, it is recognized that spills will continue to occur due to accidents, negligence and natural disasters. It is therefore also necessary to develop an array of countermeasures to contain spills to prevent them from entering watercourses and to control and remove those that reach waters to minimize damage to the water ecosystem. The variability of the hazardous materials necessitates development of a wide range of countermeasures. Improved processes need to be developed to convert waste automobile oils to useable products to prevent dumping in watercourses.

Preceding page blank

OIL SPILLS

Preceding page blank

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 6 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1508 DEO

TITLE OF PROJECT: "Demonstration of the Complete Conversion of Crankcase Waste Oil Into Useful Products - Without Producing Pollutant Material"

CONTRACTOR: **PROJECT DIRECTOR**

National Oil Recovery Corporation
Hook and Constable Road
Bayonne, New Jersey

Project Site: Bayonne, New Jersey

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	**Project Cost:** $1,678,104
Completion Date:	**Federal Cost:** $387,331

DESCRIPTION OF PROJECT

From the publication "Petroleum Facts and Figures," 1967, one billion gallons of lubricating oil for automobiles were sold nationally in 1965. Only approximately 120 million gallons are re-refined. Of this amount, approximately 25% by volume becomes sludge residue that requires the development of special disposal techniques. Accordingly, a significant portion of the National production even after re-refining enters the environment.

The current methods of re-refining in many instances are marginal operations in competition with refining of virgin oils. Many re-refining have gone out of business, increasing the magnitude of the oil pollution problem.

This grant will demonstrate a new simplified process requiring minimum capital equipment and suitable for package construction for installations near waste oil sources and markets, as well as near complete conversion efficiency to reusable oil products and substantial reduction of the pollution potential from re-refining operations themselves. In addition, the process produces no sludge which has to be disposed. The grantee purports to have developed a saleable product for every cut.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 DHP

TITLE OF PROJECT: "Collection of Spilled Oil With the Aid of Foams"

GRANTEE:
City of Cleveland
City Hall
601 Lakeside Avenue
Cleveland, Ohio 44114

PROJECT DIRECTOR:
Dr. Edward J. Martin
Director, Clean Water Task Force
City of Cleveland
Cleveland, Ohio 44114

Project Site: Cleveland, Ohio

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 7/1/69

Completion Date: 6/30/70

Project Cost: $98,300

Federal Cost: $68,810

DESCRIPTION OF PROJECT

The project, to be directed by the City of Cleveland and performed in part by Horizons Incorporated, will develop a device to collect spilled oil from the water surface. The device will include provisions for trapping the oil film in a foam, collection and destruction of the oily foam.

A basic study of potential uses of "trap oil" collected from the Cuyahoga River will also be carried out.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 6 *Federal Water Pollution Control Act, As Amended.*

PROJECT NUMBER: 1508 DJG

TITLE OF PROJECT: "Proposed Program for Preventing and Eliminating Oil Pollution from the Buffalo River."

CONTRACTOR:
City of Buffalo
65 N. Vagara Street
Buffalo, New York 14202

PROJECT DIRECTOR

Project Site: Buffalo, New York

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 7/28/68
Project Cost: $737,194
Completion Date: 1/28/71
Federal Cost: $552,894

DESCRIPTION OF PROJECT

1. Develop, utilize, and evaluate equipment and techniques for containing and removing oil in the Buffalo River, which is heavily polluted with oil due to the large number of industries located on it and to the sanitary/storm sewers which discharge into it. These methods will not interfere with the navigation of large ships in the river. This work will include utilization of pneumatic barriers for the containment of oil, as well as utilization of mechanical surface oil-boom systems, including the associated recovery equipment (skimmers).
2. Develop instrumentation for monitoring oil in sewer systems and the river, for detecting the sources of this oil, and for providing warning in time to permit its interception.
3. Provide and evaluate means for trapping oil in sewer systems.
4. Devise methods for sampling oil to determine its concentration.
5. Furnish an analysis of costs and an economic evaluation of methods and techniques utilized.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6 *Federal Water Pollution Control Act, As Amended*

PROJECT NUMBER: 1508 DJM

TITLE OF PROJECT: "Investigation of Recovery of Large Marine Oil Spills by use of a Vortex Assisted Air Lift System"

GRANTEE:

Battelle Memorial Institute
Pacific Northwest Laboratories
Richland, Washington

PROJECT DIRECTOR:

Project Site: Richland, Washington

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 1969

Project Cost: $29,840

Completion Date: April 27, 1970

Federal Cost: $29,840

DESCRIPTION OF PROJECT

Delineate an optimum system which utilizes a vortex generator and a high capacity air lift system with an adjustable suction nazzel for pickup of spilled oil from the water surface. Performance of the system will be evaluated by prototype tests under simulated at-sea conditions.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 DJN

TITLE OF PROJECT: "In-Tank Gellation to Reduce Oil Loss from Tankers"

GRANTEE:

Western Company
2201 Waterview Parkway
Richardson, Texas

PROJECT DIRECTOR:

Project Site: Richardson, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	February 20, 1969	**Project Cost:**	$230,647
Completion Date:	December 19, 1970	**Federal Cost:**	$230,647

DESCRIPTION OF PROJECT

Development of a system to rapidly gel oil within a tanker compartment to reduce oil pollution incidents caused by leaking tankers. The systems considered will be designed for on board and portable facilities to be transported to the point of use by watercraft or a large helicopter.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 DJO

TITLE OF PROJECT: "Oil Tagging System Study"

GRANTEE:	**PROJECT DIRECTOR:**
Melpar Incorporated 7700 Arlington Blvd. Falls Church, Virginia 22046	W. J. Watson

Project Site: Arlington, Virginia

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 2/28/69	**Project Cost:** $50,000
Completion Date: 9/30/69	**Federal Cost:** $50,000

DESCRIPTION OF PROJECT

Determine an operational system(s) for tagging petroleum and petroleum products to be shipped in watercraft and seagoing vessels, to facilitate tracing the source of spilled oil. The study will include consideration of the feasibility of utilizing the following identification methods:

a. Chemical Tags
b. Radiochemical Tags
c. Passive chemical/physical, analytical techniques
d. Particle Tags

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 DJP

TITLE OF PROJECT: "Collection and Oil Water Separation System"

GRANTEE:
The Garrett Corporation
9851-9951 Sepulveda Boulevard
Los Angeles, California 90009

PROJECT DIRECTOR:
J. W. Abbott

Project Site: Los Angeles

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 4/1/69

Completion Date: 5/1/70

Project Cost: $123,402

Federal Cost: $123,402

DESCRIPTION OF PROJECT

The project will develop and demonstrate the effectiveness of an oil skimming device and a high capacity, high efficiency centrifuge to be used to collect spilled oil from the water surface. Centrifuge design capacity will be 500 gallons per minute.

The skimming device and oil-water separator will be tested separately under simulated conditions, then mounted on a suitable platform for the evaluation of performance on chronic oil slicks in the Los Angeles harbor areas.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b *Federal Water Pollution Control Act, As Amended*

PROJECT NUMBER: 1508 DJQ

TITLE OF PROJECT: "Treatment of Oil Wastes Through the Use of Emulsifying Agents"

GRANTEE:

Sonics International Inc.
7101 Carpenter Freeway
P. O. Box 47088
Dallas, Texas 75247

PROJECT DIRECTOR: Mr. C. B. Easley

Project Site: Dallas, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 6/13/69

Completion Date: 9/5/69

Project Cost: $43,058

Federal Cost: $43,058

DESCRIPTION OF PROJECT

The project will determine the feasibility of transporting oil in the form of a highly viscous emulsion created by utilizing ultrasonic techniques and certain additives. The high resistance to flow to be created will reduce cargo loss in the event of an accident.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 DOZ

TITLE OF PROJECT: "Test and Evaluate Mechanical and Pneumatic Barriers To Contain Spilled Oil and Means for Removing the Contained Oil in Harbors and Adjacent Waters"

GRANTEE:
Maine Port Authority
40 Commercial Street
Portland, Maine 04111

PROJECT DIRECTOR:
Mr. Edward Langlois

Project Site: Portland, Maine

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	7/19/68	**Project Cost:**	$106,975
Completion Date:	7/15/70	**Federal Cost:**	$ 70,525

DESCRIPTION OF PROJECT

This project will test and evaluate a plastic foam boom and a diffused air bubble barrier for containment of oil spillages in the Port area and then follow up the containment phase with the design, construction, and evaluation of an oil recovery device to remove the contained oil. Limited demonstration of currently available oil removal equipment are also planned in cooperation with equipment users and suppliers. The eighteen month study will consider not only the effectiveness and removal efficiencies of the techniques involved but will give emphasis to the economic and logistics involved in oil spillage protection and control.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 DZR

TITLE OF PROJECT: "A Preliminary Study of Oil Spill Damage in the Intertidal Retions of Santa Barbara and Venture Counties, California"

GRANTEE:

University of California,
Santa Barbara
Department of Biological Sciences
Santa Barbara, California

PROJECT DIRECTOR:

Dr. Michael Neushul

Project Site: Santa Barbara, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 2/28/69

Completion Date: 7/28/69

Project Cost: $72,000

Federal Cost: $72,000

DESCRIPTION OF PROJECT

Survey intertidal zones at ten stations previously surveyed and ten new stations to determine the extent of departure from normal in populations of plants and animals resulting from the Santa Barbara oil spill.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 EAF

TITLE OF PROJECT: "Multi-Spectrum Scanning to Determine Oil Slick Fate"

GRANTEE:
University of Michigan
Willow Run Branch
Ann Arbor, Michigan

PROJECT DIRECTOR:

Project Site: Santa Barbara, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 5/26/69

Project Cost:

Completion Date: 12/30/69

Federal Cost: $16,235

DESCRIPTION OF PROJECT

Determine the multi-spectral radiation characteristics of crude oil in the Santa Barbara Channel. This data will be used to develop remote sensing techniques for oil slick detection.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 EAC

TITLE OF PROJECT: "Documentation of Cleanup Experience Following the Oil Spill Disaster at Santa Barbara, California

GRANTEE:
Battelle Memorial Institute
Pacific Northwest Laboratories
Richland, Washington

PROJECT DIRECTOR:

Project Site: Santa Barbara, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 4/18/69

Project Cost: $24,400

Completion Date: 7/18/69

Federal Cost: $24,400

DESCRIPTION OF PROJECT

The purpose of the study is to document the causes and effects of the February 1969 oil spill in the Santa Barbara Channel and assess the effectiveness of measures tried to contain and clean up the spilled oil. The twelve week study is supported jointly by the Federal Water Pollution Control Administration and the Coast Guard.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 EBZ

TITLE OF PROJECT: "Treatment of Waterfowl Trapped in Oil Polluted Waters"

GRANTEE:	**PROJECT DIRECTOR:**
University of California, San Diego La Jolla, California 92037	Lynn A. Criner, Associate Professor of Pathology

Project Site:

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	6/30/69	**Project Cost:**	$30,709
Completion Date:	12/30/69	**Federal Cost:**	$30,709

DESCRIPTION OF PROJECT

1. Determine the factors contributing to the death of wildfowl which have become coated with oil.
2. Develop methods of removing oil from birds plumage and restoring feathers to their normal condition.
3. Determine methods of managing cleansed birds to minimize mortality during captivity.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b *Federal Water Pollution Control Act, As Amended*

PROJECT NUMBER: 1508 EAL

TITLE OF PROJECT: "The Study Abundance and Composition of Deep and Shallow Water Macroplankton and Littoral Fish Population in and about the Santa Barbara Channel"

GRANTEE:

University of California,
Santa Barbara
Department of Biological Sciences
Santa Barbara, California

PROJECT DIRECTOR:

Dr. A. W. Sbling

Project Site:

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 5/16/69

Project Cost: $17,300

Completion Date: 12/30/69

Federal Cost: $17,300

DESCRIPTION OF PROJECT

1. Survey shallow and deep water plankton and shallow water benethic fish populations to determine abundance and composition in regions influenced by the February 1969 oil spill.
2. Determine the departure from normal conditions utilizing existing baseline data. Computer programs which relate species composition diversity and abundance to environmental factors to environmental conditions will be used.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 EHF

TITLE OF PROJECT: "Microbiological Seeding to Accelerate Degradation of Hydrocarbons"

GRANTEE:
University of Texas
Marine Science Institute
Port Aransas, Texas 78373

PROJECT DIRECTOR:
Dr. Carl Oppenheimer

Project Site: Port Aransas, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 4/11/69

Project Cost: $113,907

Completion Date: 4/11/71

Federal Cost: $ 99,904

DESCRIPTION OF PROJECT

The original proposal was designed to study petroleum microorganisms to be used for pollution control. The first phase of the program included experimental designs to assess and develop microbial seeding techniques to accelerate normal oil degradation processes. This was to be accomplished by producing hydrocarbo oxidizing microorganisms with more rapid growth; production of a nutrient material to enhance growth; studying UV resistence for surface growth and in microbial production of non-toxic surface active agents or physical absorbants to produce emulsification and larger water-oil surface.

The continuation program is intended to extend laboratory and tank experiments on microbial degradation of oil slicks to actual estuarine conditions. The residual hydrocarbons will be determined in selected natural or polluted marine estuaries, sediments and living organisms. In addition, the project will include participation in controlled spilled tests off the Texas coast.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 EHO

TITLE OF PROJECT: "State-of-the-Art Report on the Composition, Properties and User of Oil Dispersants

GRANTEE:
Melvin Z. Polickoff
24 Knoll Road
Tenafly, New Jersey

PROJECT DIRECTOR:
Melvin Z. Polickoff
24 Knoll Road
Tenafly, New Jersey

Project Site: Edison, New Jersey

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 4/1/69

Project Cost:

Completion Date: 4/15/69

Federal Cost: $1,000

DESCRIPTION OF PROJECT

Using information available through personal experience, literature search and interviews, prepare a written report which critically summarize current knowledge on the following:

1. Chemical nature of dispersants
2. Physical and chemical properties of dispersants
3. Manufacturing Processes
4. Uses of dispersants and procedures by which their effectiveness, especia-ly for dispersion of oil on water may be evaluated.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 EIL

TITLE OF PROJECT: "Joint American Petroleum Institute-Federal Water Pollution Control Administration Conference on Prevention and Control of Oil Spillage

GRANTEE:

American Petroleum Institute
1271 Avenue of the Americas
New York, New York 10020

PROJECT DIRECTOR:

Project Site: New York City

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	3/15/69	**Project Cost:**	$18,000
Completion Date:	12/30/69	**Federal Cost:**	$9,000

DESCRIPTION OF PROJECT

The Federal Water Pollution Control Administration and the American Petroleum Institute will sponsor a two and a half day technical conference on the prevention and control of oil spillage. The Conference will be held December 15-17, 1969, in New York City at the Americana Hotel.

In addition to papers, the Conference will feature exhibits of pertinent equipment. The Conference will provide a forum for industry and government personnel involved in the problem of controlling pollution caused by oil spillage.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 EJO

TITLE OF PROJECT: "Investigation of Surface Films - Chesapeake Bay Entrance"

GRANTEE:

Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

PROJECT DIRECTOR:

Dr. Wyman Harrison, Chairman
Department of Oceanography
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

Project Site: Gloucester Point, Virginia

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 1, 1969

Completion Date: October 30, 1971

Project Cost:

Federal Cost: $120,542

DESCRIPTION OF PROJECT

The objective of the project is to determine the fate of oil spilled in marine and estuarine waters. The rate of physical, chemical and biological changes on the properties of three grades of oil will be investigated employing a series of planned, carefully controlled oil releases.

Data on oil slick movement will be recorded and used to refine a slick movement prediction equation developed during the first year of the project.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 EMP

TITLE OF PROJECT: "Molecular Interactions at the Oil-Water Interface and Formation of Microemulsions"

GRANTEE:

Columbia University in the
City of New York
Box 20
Low Memorial Library
New York, New York 10027

PROJECT DIRECTOR:

Dr. D. O. Shah
Laboratory of Surface Chemistry
Lamont - Deherty Geological Observatory
Palesades, New York 10964

Project Site: Lamont-Doherty Geological Observatory - Palesades, New York

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 6/1/69

Project Cost: $30,257

Completion Date: 6/31/70

Federal Cost: $28,816

DESCRIPTION OF PROJECT

Basic laboratory studies of factors influencing the effectiveness of dispersants which might be used for oil pollution control purposes.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 EOS

TITLE OF PROJECT: "Evaluation of Selected Earthmoving Equipment in Beach Restoration Operations"

GRANTEE:

URS Systems Corporation
1811 Trousdale Drive
Burlingame, California 94010

PROJECT DIRECTOR:

Myron B. Hawkins
URS Systems Corporation
1811 Trousdale Drive
Burlingame, California 94010

Project Site: Burlingame, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: August 29, 1969

Project Cost: $179,246

Completion Date: June 6, 1970

Federal Cost: $179,246

DESCRIPTION OF PROJECT

Commercially available earth moving equipment used to date in beach restoration operations has not in most cases been well suited to efficient removal of contaminated beach material and/or mixtures of sorbing materials such as straw.

The primary penalty of inefficiency in this operation is inadvertent collection of large volumes of uncontaminated sand with attendant high costs and reduced restoration rates. Improvement in the efficiency of the collection operations will not only stand to overcome these problems, but will reduce the burden on the next stage cleaning or ultimate disposal of the collected materials.

The project will be aimed at evaluating the effectiveness of selected pieces of earth moving equipment, making appropriate minor modifications to improve efficiency, developing operating procedures and demonstrating the system on a contaminated beach.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 6b
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1508 EOT

TITLE OF PROJECT: "Application of Froth Flotation Separation to Beach Restoration

CONTRACTOR:	**PROJECT DIRECTOR**
Melpar Incorporated 7700 Arlington Boulevard Falls Church, Virginia 22046	Dr. Thomas P. Meloy

Project Site: Falls Church, Virginia

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	9/25/69	**Project Cost:**	$466,168
Completion Date:	3/25/71	**Federal Cost:**	$466,168

DESCRIPTION OF PROJECT

Design, construct and demonstrate the operation of a 30 ton/hour capacity froth flotation plant adapted for use in separation oil from contaminated beach sand. The plant made up of commercially "off the shelf" components and will be readily assembled at the location of the cleanup operation.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1508 EPL

TITLE OF PROJECT: "Spreading of Oil Films"

CONTRACTOR:

New York University
School of Engineering and Science
University Heights
Bronx, New York 10453

PROJECT DIRECTOR

Project Site: New York University

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 21, 1968

Completion Date: May 30, 1969

Project Cost:

Federal Cost: $25,716

DESCRIPTION OF PROJECT

Laboratory scale studies to determine and correlate the factors influencing the spreading of oil spilled at sea. The correlations will be aimed at predicting the rate and extent of spread of oil films so that, available resources can be used most effectively in combating pollution caused by oil spills.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1508 ESL

TITLE OF PROJECT: "Containment and Collection of Oil in Protected Waters"

CONTRACTOR:

Massachusetts Institute of Tech.
77 Massachusetts Avenue
Cambridge, Massachusetts 02139

PROJECT DIRECTOR

Dr. David P. Hoult
Massachusetts Institute of Technology
Room 3-252
Cambridge, Massachusetts 02139

Project Site: Cambridge, Massachusetts

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 10/15/69

Project Cost: $150,000

Completion Date: 10/15/70

Federal Cost: $135,000

DESCRIPTION OF PROJECT

Model studies will be carried out to gain information needed to design oil spill containment and collection systems for use in harbors, estuaries and near shore coastal waters. Study topics will include:

1) The motion and spreading of oil slicks;
2) The configuration of a wind driven oil slick restrained by a boom in the presence of waves and currents;
3) The details of motion of a section of a boom and the fluid mechanics of the water and oil flow associated with this motion;
4) The ability of a boom in follow moving wave contours, and the relation of this motion to structural requirements;
5) The flow of water and oil in a channel utilized to collect and concentrate oil slicks.
6) The fluid mechanics of oil skimming devices.
7) Boom strength requirements in short chop and, a 6 month study to develop preliminary design information.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 6b Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1508 EUU

TITLE OF PROJECT: "Hydrocyclonic System for Separating Oil from Sea Water"

CONTRACTOR:	**PROJECT DIRECTOR**
American Process Equipment Corp. 10826 Venice Boulevard Culver City, California 90230	Robert Rod, President American Process Equipment Corp. 10826 Venice Boulevard Culver City, California 90230

Project Site: Culver City, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	12/12/69	**Project Cost:**	$78,870
Completion Date:	6/30/70	**Federal Cost:**	$78,870

DESCRIPTION OF PROJECT

Design, construct and test an oil-water separator which employs a cyclone concept to separate un-emulsified oil-water mixtures. The project will be broken into two phases - laboratory evaluation of a 50 gpm unit and field demonstration of a IMGD unit.

The separator is intended for use in conjunction with devices which skim spilled oil from the water surface. The separator will be developed with the following objectives:

1. High through put
2. Maximum oil-water separation
3. Minimum size, weight, space and power requirements.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1508 EZK

TITLE OF PROJECT: "Voraxial Oil Separation System

CONTRACTOR:

Reynolds Submarine Services Corp.
615 Southwest Second Avenue
Miami, Florida 33130

PROJECT DIRECTOR

Arthru L. Markel, General Manager
Reynolds Submarine Services Corp.
615 Southwest Second Avenue
Miami, Florida 33130

Project Site: Miami, Florida

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 11/5/69

Completion Date: 6/5/70

Project Cost:

Federal Cost: $368,982

DESCRIPTION OF PROJECT

Design, construct and test at pilot scale (50 gpm) high capacity oil-water separator device for separation of oil-water mixture collected by mechanical oil slick harvesting devices. Key features of the separator are high capacity with low power and space requirements. The project involves concept development of a unique oil-water separator invented by Reynolds Submarine Services. The device is based on a pump-separator unit which imparts a swirling action in the discharge line as it pumps the oil-water mixture collected by a skimmer system. The swirling action caused the oil to concentrate at the centerline of the pipe where it is skimmed off by one or more pitot tubes. It is estimated that an 8 inch 2500 gpm unit will be able to produce a water stream with from 10 to 100 mg/l oil and an oil stream within excess of 50% oil.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1508 FIG

TITLE OF PROJECT: "A Mobile Washing System for In Place Restoration of Beaches Contaminated by Oil"

CONTRACTOR:

Ecological Research Corporation
Hanover, New Hampshire

PROJECT DIRECTOR

Dr. Robert C. Dean, Jr., President
Ecological Research Corporation
Hanover, New Hampshire

Project Site: Hanover, New Hampshire

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 3/1/71

Project Cost:

Completion Date: 1/1/72

Federal Cost: $45,892

DESCRIPTION OF PROJECT

Design and test a pilot scale system for cleaning oil contaminated beach sand. The system includes a jet washer and cyclones for oil-water-sand separation. The project is the first phase of a two phase program to develop a compact mobile sand cleaning plant capable of processing 100 ton/hr. of oil contaminated beach sand.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 6b *Federal Water Pollution Control Act, As Amended.*

PROJECT NUMBER: 1508 FMW

TITLE OF PROJECT: "Biological Recovery Following and Oil Spill

CONTRACTOR:

Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543

PROJECT DIRECTOR

Dr. Howard L. Sanders
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543

Project Site: Woods Hole, Massachusetts

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 12/1/69
Project Cost: $44,862
Completion Date: 11/30/70
Federal Cost: $31,404

DESCRIPTION OF PROJECT

Studies to be conducted will document the biological effects of a large spill of fuel oil in Buzzards Bay, Massachusetts. Patterns of recolonization and faunal changes will be correlated with studies of the distribution, movement and fate of oil in the sediments.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 FOP

TITLE OF PROJECT: "Oil Pollution Detection by Microwave Radiometry"

CONTRACTOR:

Microwave Sensor Systems
8050 E. Florence Avenue
Downey, California 90240

PROJECT DIRECTOR

J. C. Auklard

Project Site: Downey, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date:

Project Cost: $16,110

Completion Date:

Federal Cost: $11,277

DESCRIPTION OF PROJECT

The project will demonstrate the application of microwave radiometry to the detection and measurement of thickness of oil slicks under visibility conditions which would limit visual observation and the effectiveness of other remote sensing techniques. A stationary monitor will be mounted at a location in a harbor subject to chronic oil pollution. Monitor output will be compared to date collected manually on slick type and thickness and interferring environmental conditions such as wave action and changes in surface temperature.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 FWL

TITLE OF PROJECT: "The Development of a Submerged Hydrodynamic Oil Contractor for the Recovery of Floating Oil"

GRANTEE:

JBF Scientific Corporation
Alpha Industrial Park
Chelmsford, Massachusetts
01824

PROJECT DIRECTOR:

Ralph A. Bianchi
JBF Scientific Corporation
Alpha Industrial Park
Chelmsford, Massachusetts 01824

Project Site: Chelmsford, Massachusetts

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1970

Project Cost:

Completion Date: June 30, 1972

Federal Cost: $187,106

DESCRIPTION OF PROJECT

The project will involve the development and demonstration of a prototype scale mechanical harvesting device based upon a unique "submerged hydrodynamic oil concentrator."

The principle of the hydrodynamic oil concentrator involves forcing the surface oil to follow the submerged contour of an inclined plan so that the oil film is thickened. The thickened film is trapped in a well at the end of the inclined plane.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 FWM

TITLE OF PROJECT: "Development of Concepts for Containment of Floating Oil and Separation of Oil from Water"

GRANTEE:	**PROJECT DIRECTOR:**
Consultec, Inc. 2351 Research Boulevard Rockville, Maryland 20850	R. B. Dayton, Director Engineering Division 2351 Research Boulevard Rockville, Maryland 20850

Project Site: Rockville, Maryland

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 8, 1970	**Project Cost:** $67,846
Completion Date: Oct. 29, 1971	**Federal Cost:** $67,846

DESCRIPTION OF PROJECT

A boom will be developed utilizing an oil-water separating fabric to improve boom performance in currents. This improvement should result from the elimination of oil losses under the boom by redirection of flow lines to force entrained oil to contact the separating fabric. The proposed boom will be flexible, supported by a combination of low pressure flotation and nylon line, and should conform to wave shapes, minimizing losses over or under the boom. A preliminary design and tank testing program will be conducted to demonstrate the feasibility of this application.

Also the fabric has potential for effective application to a high rate oil separtor. A bench scale model of a separation device will be designed and constructed to determine the feasibility of this concept.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b *Federal Water Pollution Control Act, As Amended*

PROJECT NUMBER: 1508 FWN

TITLE OF PROJECT: "Recovery of Floating Oil-Rotating Disk Type Skimmer"

GRANTEE:	**PROJECT DIRECTOR:**
Atlantic Research Corporation Missile Systems Division Costa Mesa, California 92626	S. T. Uyeda Atlantic Research Corporation Missile Systems Division Costa Mesa, California 92626

Project Site: Costa Mesa, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 17, 1970	**Project Cost:** $68,906
Completion Date: January 5, 1971	**Federal Cost:** $68,906

DESCRIPTION OF PROJECT

Concept development studies on a self contained oil harvesting device employing a series of rotating disks. Design variable to be investigated at model scale include disk material, shape, spacing, velocity of rotation and depth of immersion.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 FTJ

TITLE OF PROJECT: "TRW Oil-Water Seperation System"

GRANTEE:
TRW Systems Group
One Space Park
Redondo Beach, California
90278

PROJECT DIRECTOR:
D. J. Graham
TRW Systems Group
One Space Park
Redondo Beach, California 90278

Project Site: Redondo Beach, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1970

Project Cost: $38,100

Completion Date: Feb. 28, 1971

Federal Cost: $38,100

DESCRIPTION OF PROJECT

Bench scale concept development studies on a oil harvesting device which utilizes surface tension forces to seperate oil globules from oil water mixtures.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 1508 FTU

TITLE OF PROJECT: "Documentation of the Breton Sound Oil Pollution Incident"

GRANTEE:

Alpine Geophysical Associates, Inc.
Oak Street
Norwood, New Jersey 07648

PROJECT DIRECTOR:

Julius Hirshman, Director
Facilities Management Division
Alpine Geophysical Associates, Inc.
Norwood, New Jersey 07648

Project Site: Breton Sound, Louisiana

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 3/20/70

Project Cost:

Completion Date: 6/20/70

Federal Cost: $24,500

DESCRIPTION OF PROJECT

The purpose of the study is to document effects of the March 1970, oil spill in Breton Sound, Gulf of Mexico, and assess the effectiveness of measures tried to contain and cleanup the spilled oil. Information is to be gathered at the site by first-hand observation, interviews and collection and correlation of data generated by key participants and observation on the scene.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 FVP

TITLE OF PROJECT: "Comprehensive Oil Spill Control Program for New York Harbor and Immediate Waters"

GRANTEE:

Fire Department, City of
New York
Municipal Building
New York, New York 10007

PROJECT DIRECTOR:

Joseph F. Connor, Assistant Chief
Marine Division, Pier "A" North River
New York, New York 10004

Project Site: New York, New York

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 6/1/70

Completion Date: 6/1/71

Project Cost: $518,415

Federal Cost: $324,452

DESCRIPTION OF PROJECT

The project will demonstrate a comprehensive full scale program for coping with oil spills. The project will involve:

1. A thorough inventory and determination of the sources, fate and movement of oil spills in and near a major sea port - the New York Harbor.
2. Design analysis and evaluation of state-of-the-art devices and techniques for oil spill control.
3. Procurement of equipment, development of spill response plans and the evaluation of their effectiveness on actual "spills of opportunity" in the New York Harbor area.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 FWO

TITLE OF PROJECT: Floating Oil Recovery Device

GRANTEE:	**PROJECT DIRECTOR:**
New Mexico State University Physical Science Laboratory Las Cruces, New Mexico 88001	Mr. Harold R. Lawrence Physical Science Laborator New Mexico State University Las Cruces, New Mexico 88001

Project Site: Las Cruces, New Mexico

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 29, 1970	**Project Cost:** $56,547.00
Completion Date: Feb. 1971	**Federal Cost:** $56,547.00

DESCRIPTION OF PROJECT

Flow bench tests of a model rotating belt-Couette flow oil recovery device were conducted in a calm water environment primarily, although a few tests were conducted in the presence of waves. These tests revealed clearly that the device is capable of harvesting oils over a broad range of viscosities at the rates and purities specified by the EPA, if the inlet can be made to "track" the water surface.

Analysis were conducted to design a catamaran vessel suitable for mounting the Oil Pickup Unit (OPU) and also providing the requisite surface following performance. Vessel response analysis showed that the required surface following behavior cannot be provided by the catamaran itself, but can be achieved by floating the OPU and decoupling this assembly from the vessel in heave and surge. A servo control for the foil device used at the OPU inlet will further enhance the surface tracking behavior.

This report is available through the Supervisor of Documents, Government Printing Office, Washington, D. C. 20242.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 FWP

TITLE OF PROJECT: "Concept Development of a Hydraulic Skimmer System for Recovery of Floating Oil"

GRANTEE:

Battelle Memorial Institute
Pacific Northwest
Laboratories
P. O. Box 999
Richland, Washington 99352

PROJECT DIRECTOR:

Mr. P. C. Walkup
(same)

Project Site:

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 17, 1970

Project Cost: $86,035

Completion Date: Jan. 17, 1971

Federal Cost: $86,035

DESCRIPTION OF PROJECT

Design fabrication and full-scale testing of an oil harvesting system employing water jet sweeps and floating, skimming and primary oil-water separation. Phase I will be limited to design and fabrication of sub-assemblies and testing of one of the two units required per vessel in a closed basin.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5, *Federal Water Pollution Control Act, As Amended*

PROJECT NUMBER: 15080 FXA

TITLE OF PROJECT: "Testing Oil Dispersant Toxicity and Emulsion Efficiency"

GRANTEE:

Syracuse University Research Corp.
Life Sciences Division
Syracuse, New York 13210

PROJECT DIRECTOR:

Dr. Richard B. Moore
Syracuse University Research Corp.
Syracuse, New York 13210

Project Site: Syracuse University

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 24, 1970

Project Cost: $14,723

Completion Date: May 24, 1971

Federal Cost: $14,723

DESCRIPTION OF PROJECT

The study will be one of four identical studies to determine reproducibility, cost and operational difficulties associated with tests developed by the Federal Water Quality Administration to measure oil dispersant toxicity and efficiency. Each contractor will measure comparative acute toxicity effectiveness and BOD of four dispersants according to procedures supplied by FWQA.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5, *Federal Water Pollution Control Act, As Amended*

PROJECT NUMBER: 15080 FXB

TITLE OF PROJECT: "Testing Oil Dispersant Toxicity and Emulsion Efficiency"

GRANTEE:

New England Aquarium
Central Wharf
Boston, Massachusetts 02110

PROJECT DIRECTOR:

Dr. S. Fai Cheuk
New England Aquarium
Central Wharf
Boston, Massachusetts 02110

Project Site: Boston, Massachusetts

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 25, 1970

Project Cost:

Completion Date: January 25, 1971

Federal Cost: $11,200

DESCRIPTION OF PROJECT

The study will be one of four identical studies to determine reproducibility, cost and operational difficulties associated with tests developed by the FWQA to measure oil dispersant toxicity and efficiency. Each Contractor will measure comparative acute toxicity effectiveness and BOD dispersants according to procedures supplied by FWQA.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 GAV

TITLE OF PROJECT: "Testing Oil Dispersant Toxicity and Emulsion Efficiency"

GRANTEE:	**PROJECT DIRECTOR:**
Pacific Engineering Laboratory 657 Howard Street San Francisco, California 94105	Robert A. Ryder, Director Pacific Engineering Laboratory 657 Howard Street San Francisco, California 94105

Project Site:
San Francisco, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1970	**Project Cost:**
Completion Date: March 29, 1971	**Federal Cost:** $16,830

DESCRIPTION OF PROJECT

The study will be one of four identical studies to determine reproducibility, cost and operational difficulties associated with tests developed by the Federal Water Quality Administration to measure oil dispersant toxicity and efficiency. Each Contractor will measure comparative acute toxicity effectiveness and BOD of four dispersants according to procedures supplied by FWQA.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 GBJ

TITLE OF PROJECT: "Development of a Concept for a Belt-Type Skimming Device for Recovering Floating Oil From Water Surfaces"

GRANTEE:

Rex Chainbelt, Inc.
4701 West Greenfield Avenue
West Wilwaukee, Wisconsin
53214

PROJECT DIRECTOR:

Mr. John Pernusch
Rex Chainbelt, Inc.
4701 West Greenfield Avenue
West Milwaukee, Wisconsin 53214

Project Site: West Milwaukee, Wisconsin

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 25, 1970

Project Cost: $166,434

Completion Date: June 25, 1971

Federal Cost: $166,434

DESCRIPTION OF PROJECT

Develop fundamental design criteria for a belt-type oil harvesting device, design and test a prototype device.

The project will include the following major tasks:

1. Engineering design of a belt-type harvesting device. In this phase special emphasis will be devoted to belt materials and belt assembly configurations.
2. Fabrication of an experimental prototype.
3. Testing under simulated environmental conditions.
4. Evaluation of test results.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 GBT

TITLE OF PROJECT: "Development and Demonstration of a Non-toxic Simulated Crude Oil"

GRANTEE:	**PROJECT DIRECTOR:**
JETCO Chemicals P. O. Box 1278 Corsicana, Texas 75110	Mr. C. D. LaSusa P. O. Box 1278 Corsicana, Texas 75110

Project Site: Corsicana, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date: April 13, 1971

Project Cost: $68,350

Completion Date: Feb. 28, 1972

Federal Cost: $68,350

DESCRIPTION OF PROJECT

To develop and demonstrate simulated non-toxic oils that will exhibit similar physical characteristics as crude oils spilled in the ocean and in fresh waters under various climate conditions.

The test vehicles will be both vegetable oils and mineral oils. The program will consist of:

(a) Modification and formulation of non-toxic oils with the range of physical characteristics desired

(b) Testing program to verify physical characteristics desired

(c) Necessary modifications

(d) Toxicity studies

(e) Necessary modifications

Project Officer: Mr. Robert Hiller, FWQA, Dallas, Texas

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 GXK

TITLE OF PROJECT: Use of Vortex Separator for Ballast Water Treatment

GRANTEE:	**PROJECT DIRECTOR:**
Natural Oil Recovery Corporation	Richard Dewling

Project Site: Bayonne, New Jersey

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	April 7, 1971	**Project Cost:**	$20,350
Completion Date:	Oct. 7, 1971	**Federal Cost:**	$20,350

DESCRIPTION OF PROJECT

A 350 gpm Vortex separator to separate oil from water was developed under contract to FWQA by American Process Equipment Company. The separator will be tested by FWQA personnel to determine its effectiveness to separate oil from ballast waters. The test site is at a nearby re-refinery, National Oil Recovery Corporation, located in Bayonne, New Jersey.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 6b
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 GYS

TITLE OF PROJECT: "Gellation of Crude Oil"

GRANTEE:	**PROJECT DIRECTOR:**
Esso Research and Engineering Co. P. O. Box 101 Florham Park, New Jersey	Mr. G. P. Canevari

Project Site: Florham Park, New Jersey

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	March 1971	**Project Cost:**	$99,350
Completion Date:	March 1972	**Federal Cost:**	$69,550

DESCRIPTION OF PROJECT

The project is intended to demonstrate a procedure for gelling oil in a model tanker compartment and to develop the engineering information necessary to apply the technique to larger scale applications. A major portion of the project is devoted to optimization of mixing techniques which are a vital part of the gellation process. A gelling demonstration will be carried out using 1,000 barrels of crude oil and the physical properties of the gel will be determined.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 HBH

TITLE OF PROJECT: "Containment and Removal of Oil Spills in Shallow Costal Waters"

GRANTEE:	**PROJECT DIRECTOR:**
Corpus Christi Area Oil Spill Control Association P. O. Box 9277 Corpus Christi, Texas 78408	Mr. Harry L. Franlin

Project Site: Corpus Christi, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 8, 1971	**Project Cost:**	$54,993
Completion Date:	June 30, 1972	**Federal Cost:**	$49,843

DESCRIPTION OF PROJECT

The objective of the project is to demonstrate the operational capability of a light weight, portable skimmer barge in semi-protected shallow waters. Because of the prevailing wind conditions in the Corpus Christi area, the skimmer barge is designed to be anchored downwind from the source of the spill with two extending boom arm spread out in the shape of a "V" so as to embrace the spill source. The skimmer barge is bottomless and thus will serve as a separation permitting the oil to accumulate at the surface where it will be pumped into a collection barge. The skimmer will be tested under different conditions with wind velocities up to 30 knots and a water chop of up to two feet.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15080 HDJ

TITLE OF PROJECT: Oil Pollution Source Identification

GRANTEE:	**PROJECT DIRECTOR:**
Phillips Scientific Corporation Bartlesville, Oklahoma 74003	Dr. John W. Miller

Project Site: Bartlesville, Oklahoma

SPECIFIC DATA ABOUT THIS AWARD

Award Date: April 15, 1971	**Project Cost:** $134,956
Completion Date: August 14, 1971	**Federal Cost:** $134,956

DESCRIPTION OF PROJECT

The objective of the project is to develop an analytical scheme which will conclusively identify the source of an oil spill regardless of the environment to which it has been subject. A passive tagging approach based on the carbon isotope ratio of the oil will be employed in conjunction with other analytical techniques. These include gas-liquid chromotography, nickel/vanadium ratio, n-parraffin profile and other chemical and physical properties of oil. The practicability of setting up computer routine based on these parameters will be investigated.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 *Federal Water Pollution Control Act, As Amended.*

PROJECT NUMBER: 15080 HDK

TITLE OF PROJECT: Development of Oil Pollution Source Identification System

CONTRACTOR:	**PROJECT DIRECTOR**
Battelle Memorial Institute 505 King Avenue Columbus, Ohio 43201	Mr. G. F. Sachsel

Project Site: Columbus, Ohio

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	**Project Cost:**
Completion Date:	**Federal Cost:** $104,145

DESCRIPTION OF PROJECT

The objective of this project is to develop an active tagging system to provide for positive identification of the source of petroleum products in the event of a spill. It is proposed to utilize an encapsulated mixture of proteins as the tagging agent. In case of a spill, the capsule would be recovered and the protein characterized by an emmulogical identification technique. Many different proteins or mixtures thereof could be utilized so that no two parties would have the same tag.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HDL

TITLE OF PROJECT: Oil Pollution Source Identification

CONTRACTOR:	**PROJECT DIRECTOR**
Esso Research & Engineering Company P. O. Box 8 Linden, New Jersey 07036	Mr. L. Berkowitz

Project Site: Linden, New Jersey

SPECIFIC DATA ABOUT THIS AWARD

Award Date: May 14, 1971	**Project Cost:** $80,178
Completion Date: Feb. 14, 1972	**Federal Cost:** $80,178

DESCRIPTION OF PROJECT

The objective of the project is to develop an analytical scheme capable of positively identifying the source of crude oil or refined petroleum products spilled into water. A passive tagging approach employing the techniques of high resolution mass spectroscopy and gas-liquid chromotography to resolve an oil spill sample into its true, stable chemical "fingerprint" is proposed. Vanadium/nickel analysis by emission spectroscopy is also included in the fingerprint data. This fingerprint data will be compared with suspect sources or with a file of "fingerprints" to make positive identification. The effect of weathering of the oil on the identification process is also being investigated.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 6b Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HEC

TITLE OF PROJECT: "Oil Pollution Source Identification"

CONTRACTOR:	PROJECT DIRECTOR
Woods Hole Oceanographic Institute	Dr. Oliver Zafiriou Dr. Max Blumer

Project Site: Woods Hole Oceanographic Institute, Woods Hole, Mass. 02543

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	May 5, 1971	Project Cost:	$60,229
Completion Date:	Oct. 15, 1972	Federal Cost:	$57,180

DESCRIPTION OF PROJECT

Oil is a chemical that has severe biological effects; therefore, oil pollution research to be fully meaningful must combine chemical and biological studies. Chemical characterization of oil in sediments and organisms can be accomplished by using gas chromatography and mass spectrometry. Both of these techniques are widely used by the oil industry in exploration for the characterization and correlation of oil in sediments, and in refining for analysis and quality control. These techniques, which describe the physical and chemical properties of an oil, must be expanded and modified to permit studying environmental fate of petroleum.

It is the objective of this study to develop these instrumental methods to the point where they are routine or standard analytical procedures for identifying oil spill samples. Included in this program would be the development of sampel handling and pre-treatment techniques, as well as optimization of columns, temperatures and resonance times for different types of oils, ranging from light fuels to heavy crudes.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 *Federal Water Pollution Control Act, As Amended.*

PROJECT NUMBER: 15080 HER

TITLE OF PROJECT: "Design, Fabrication, Assembly, Test and Evaluation of an Oil Absorbent Harvesting System"

CONTRACTOR:	**PROJECT DIRECTOR**
URS Research Company 155 Bovet Road San Mateo, California 94402	Mr. James D. Sartor

Project Site: San Mateo, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 14, 1971	**Project Cost:**	$141,657
Completion Date:	Feb. 14, 1972	**Federal Cost:**	$141,657

DESCRIPTION OF PROJECT

The objective of this project is to design a system for the removal of oil from water with the aid of sorbent materials. The system will be designed to utilize commercially available equipment which, with minor modifications and attachments, can be field assembled for installation on a variety of vessels depending on the location of the spill.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HES

TITLE OF PROJECT: "A Feasibility Study for an Oil Recovery System Using Sorbent Materials"

CONTRACTOR:
Shell Pipeline Corp.
Research and Development
Laboratory
P. O. Box 35335
Houston, Texas 77035

PROJECT DIRECTOR
Mr. E. A. Milz

Project Site:

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 21, 1971

Project Cost: $133,113

Completion Date: Feb. 21, 1972

Federal Cost: $133,113

DESCRIPTION OF PROJECT

The objective of this project is to develop a system utilizing foamed-on-site polyurethane foam for the sorption of the oil and a continuous conveyor type of recovery system. The foam generating and broadcasting equipment will be compact and light weight and the harvesting and liquid sub-systems will be designed to be easily transportable to the spill site by either air or highway. All system components will be designed for use on vessels of opportunity at the site of the spill.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HET

TITLE OF PROJECT: "Oil Recovery System Using Sorbent Materials"

CONTRACTOR:	**PROJECT DIRECTOR**
Meloy Laboratories 6631 Iron Place Springfield, Va. 22151	Mr. L. K. Eliason

Project Site: Springfield, Virginia

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 1971	**Project Cost:**	$132,300
Completion Date:	Dec. 1971	**Federal Cost:**	$132,300

DESCRIPTION OF PROJECT

The objective of this project is to study the broadcasting and harvesting techniques which may be utilized in a sorbent recovery system and the contact time required between the oil and the sorbent. The information which will be obtained from this project will provide the necessary information on the actual quantities of sorbent required for any given spill, rather than having to rely on a theoretical quantity calculated from sorbent properties.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HEU

TITLE OF PROJECT: "Concept Development of a System for the Recovery of Oil from Unprotected Waters with the Acid of Polyurethane Foam Sorbents"

CONTRACTOR:	**PROJECT DIRECTOR**
Battelle Memorial Institute Pacific Northwest Laboratories P. O. Box 999 Richland, Washington 99352	Paul C. Walkup

Project Site: Richland, Washington

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 18, 1971	**Project Cost:** $88,550
Completion Date: March 18, 1972	**Federal Cost:** $88,550

DESCRIPTION OF PROJECT

The objective of this project is to develop a system utilizing polyurethane foam as the sorbent material. The system will utilize water spray booms, extending outward from a support vessel, to concentrate oil-soaked shredded polyurethane on the water surface. The concentrated material will be withdrawn from the water surface by means of partly submerged conveyors and deposited on a second conveyor-oil separator. This unit extracts the oil by pressing and is provided with a heating system as required to process material soaked with viscous materials. Recovered oil will flow by gravity to a receiving tank which, when filled, are dumped overboard for pickup or towing by other vessels. The sorbent from which the oil has been extracted will be conveyed forward by means of a closed circuit Redler-type conveyer to mulcher-spreaders which redistribute the sorbent on the water surface.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HEV

TITLE OF PROJECT: "Oil Recovery System Using Sorbent Materials"

CONTRACTOR:
Hydronautics, Inc.
Pindell School Road
Laurel, Maryland

PROJECT DIRECTOR
Dr. A. Gollan

Project Site: Laurel, Maryland

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 5/20/71

Completion Date: 5/20/72

Project Cost: $123,345

Federal Cost: $123,345

DESCRIPTION OF PROJECT

The objective of this project is to develop the necessary engineering data and preliminary designs so that the feasibility, effectiveness and cost of a continuous oil recovery system can be determined. The development program consists of sorbent selection, development of broadcasting techniques, development of harvesting techniques, recovery platform design, and oil recovery system development. A one-fourth scale model, suitable for evaluation in the contractor's wave tank, will be constructed.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HFS

TITLE OF PROJECT: "Assessment of Intertidal Animals and Plants Following Contamination by Oil"

CONTRACTOR:

The Regents of the University
of California
Berkeley, California 94923

PROJECT DIRECTOR

Cadet Hand
Box 247, Bodega Bay
California 94923

Project Site: Berkeley, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 5/1/71

Project Cost: $42,297

Completion Date: 6/30/72

Federal Cost: $40,092

DESCRIPTION OF PROJECT

This proposal requests support for an investigation to assess the re-population of several intertidal sites which, prior to the San Francisco Bay Standard Oil Incident, were heavily populated with marine animals and plants, but, as a result of the Incident, have suffered substantial loss through death and retardation. The assessment will include (1) a survey of each of the sites at bi-monthly intervals for a total of twelve (12) months to permit an estimate of repopulation and (2) an estimate of the secondary impact of the oil spill on the disruption of the food web by examination of the sexual health of four intertidal marine organisms.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 *Federal Water Pollution Control Act, As Amended.*

PROJECT NUMBER: 15080 HGX

TITLE OF PROJECT: Temperature Effects of Santa Barbara Crude Oil in the Upper Intertidal Zone

CONTRACTOR:
Allan Hancock Foundation
University of Southern
California
Los Angeles, California

PROJECT DIRECTOR
Dr. Dale Strauchan

Project Site: Los Angeles, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 6/30/71
Project Cost: $19,620
Completion Date: 11/31/72
Federal Cost: $14,590

DESCRIPTION OF PROJECT

The objective of this study is to evaluate the temperature effects of oil in the intertidal zone on larval settlement and subsequent survival of these organisms. The information developed by this project will assist in determining and assessing the biological damage resulting from oil spills.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HLB

TITLE OF PROJECT: "Request for Approval to contract for a project for "Recycling of Waste Auto Lubes into Diesel Fuels and other Petroleum Products

CONTRACTOR:

Solfred Maizus, AIA
National Oil Recovery Corp
P. O. Box 338
Bayonne, New Jersey 07002

PROJECT DIRECTOR

Solfred Maizus, AIA
National Oil Recovery Corp.
P. O. Box 338
Bayonne, New Jersey 07002

Project Site: Bayonne, New Jersey

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 10/1/71

Completion Date: 9/1/73

Project Cost: $1,710,000

Federal Cost: $395,000

DESCRIPTION OF PROJECT

The principal objectives of the project is to convert waste crankcase oil to a diesel oil and a fuel oil with no solid or liquid wastes discharged to the environment.

The National Oil Recovery Corporation's vacuum-distillation process system will be utilized and modified to convert the waste oil feed stock to diesel fuel and other useful products which will provide sufficient economic incentive of a magnitude to revitalize the industry to a capacity that will be able to accept and convert and recycle the oil drainage to useful products without producing polluting effluents.

EPA Project Officer - Richard Keepler
Northeast Region
Room 2303, John F. Kennedy
Federal Bldg., Boston, Mass 02203

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HOK

TITLE OF PROJECT: Aerial Surveillance Spill Prevention System 68-01-0140

CONTRACTOR:	**PROJECT DIRECTOR**
McDonnell Aircraft Company Box 516 St. Louis, Missouri 63166	Mr. J.V. Ellison

Project Site: St. Louis, Missouri

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 30, 1971	**Project Cost:**	$32,791
Completion Date:	March 31, 1972	**Federal Cost:**	$32,791

DESCRIPTION OF PROJECT

This project is designed to determine the feasibility of using standard aerial mapping cameras in a multiband array to detect and identify potential spill sources adjacent to waterways. Several test sites in the St. Louis, Missouri region have been selected for overflights. The data obtained will be correlated with actual ground truth information and data from McDonnell's data base file of over 360,000 feet of imagery and maps of the region. The data will be analyzed to locate and identify potential spill sources, magnitude, status of storage equipment and protective measures, runoff patterns and threat to the waterways. The project will be completed in six months, at which time a report will be prepared specifying the equipment, procedures and personnel qualifications to be used in an aerial surveillance spill prevention system.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HOL

TITLE OF PROJECT: Aerial Surveillance Spill Prevention System
68-01-0145

CONTRACTOR:	**PROJECT DIRECTOR**
Earth Satellite Corporation 2150 Shattuck Avenue Berkeley, California 94704	Dr. Robin I. Welch

Project Site: Berkeley, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 30, 1971	**Project Cost:**	$47,000
Completion Date:	March 31, 1972	**Federal Cost:**	$47,000

DESCRIPTION OF PROJECT

The goal of this project will be to develop a system for rapid, synoptic aerial surveillance of potential oil and hazardous materials spills sources adjacent to waterways. Selected test sites in the San Francisco Bay area will be overflown and photographed at various scales using color infrared, near ultraviolet, panchronatic and near infrared black and white photography. Several low altitude flights will use thermal infrared imagery to determine the level of industrial activity at various sites. Photo interpretation techniques will be evaluated and the practicability as well as the economy of the approach will be analyzed. The project will be completed in six months, and a final report describing the approach used and the feasibility of the system for EPA use will be presented.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HOP

TITLE OF PROJECT: Oil Spill Surveillance System
0150

CONTRACTOR:	PROJECT DIRECTOR
Texas Instruments, Inc. P. O. Box 6015 Dallas, Texas 75222	Mr. M. E. Navares

Project Site: Dallas, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 30, 1971	Project Cost:	$211,406
Completion Date:	July 30, 1972	Federal Cost:	$211,406

DESCRIPTION OF PROJECT

Texas Instruments will develop and demonstrate an active infrared detector and imaging device which will be used in an oil spill surveillance system. The imaging device employs a miniature, forward-looking infrared system, with a TV link for scanning the aerial surface of spilled oil water. Alarm and automatic monitoring of the spills are features of the system which, together with the detection, imaging and recording components, can be positioned on elevated platforms, bridges and similar fixed on-shore structures. The development and demonstration work on the project will be completed in ten months, and a final report will be submitted to EPA one month thereafter.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15080 HOQ

TITLE OF PROJECT: Oil Spill Surveillance System -0146

CONTRACTOR:
Baird-Atomic
125 Middlesex Turnpike
Bedford, Massachusetts 01730

PROJECT DIRECTOR
Mr. H. G. Eldering

Project Site: Bedford, Massachusetts

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 30, 1971
Project Cost: $185,298
Completion Date: Sept. 30, 1972
Federal Cost: $185,298

DESCRIPTION OF PROJECT

This project involves the development and demonstration of an oil spill surveillance system based on the use of ultraviolet fluorescence emission detection. The system will detect and identify oil, as well as monitor the area covered by the oil on the water. Identification of oil type is achieved through automatic analysis of the ultraviolet fluorescence spectra. The probability of false alarms, due to non-oily materials, is minimal. Testing to determine the effectiveness of the system will be conducted in the laboratory and at a typical waterway near Bedford. Project completion is scheduled for Summer, 1972. A report describing the equipment design, operating characteristics and feasibility for operating as a remote surveillance system will be delivered one month after the completion of the project.

HAZARDOUS MATERIAL SPILLS

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 6(b) *Federal Water Pollution Control Act, As Amended.*

PROJECT NUMBER: 15080 FOZ (Contract 14-12-866)

TITLE OF PROJECT: "Study of Spillage of Hazardous Polluting Substances"

CONTRACTOR:	PROJECT DIRECTOR
Battelle Memorial Institute Pacific Northwest Laboratory P. O. Box 999 Richland, Washington	W. H. Swift Battelle Memorial Institute P. O. Box 999 Richland, Washington

Project Site: Richland, Washington

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	May 12, 1970	Project Cost:	$60,000
Completion Date:	October 1, 1970	Federal Cost:	$60,000

DESCRIPTION OF PROJECT

A study to evaluate the causes, effects and existing methods of migating the effects of spills of hazardous polluting substances and recommendations for development of effective means for coping with these incidents.

Specific areas to be included in the study are: Classification of hazardous substances; an analysis of potential for hazardous materials spills; evaluation of effectiveness of existing contingency plans; evaluation of restoration methods; application of existing technology to detection control and treatment and recommendations for programs to develop new technology.

PROJECT OFFICER:
Paul Heitzenrater, Chief
Hazardous Materials Spill Control Program
Technology Division
Environmental Protection Agency
Washington, D. C. 20460

Preceding page blank

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 6(b) *Federal Water Pollution Control Act, As Amended.*

PROJECT NUMBER: 15090 GLU (Contract 68-01-0038)

TITLE OF PROJECT: "Rapid Detection of Toxic Materials in Water"

CONTRACTOR:

Midwest Research Institute
425 Volker Boulevard
Kansas City, Missouri 64110

Project Site: Kansas City

PROJECT DIRECTOR

Dr. Louis H. Goodson
Senior Advisor for Biology
Midwest Research Institute
425 Volker Boulevard
Kansas City, Missouri 64110

SPECIFIC DATA ABOUT THIS AWARD

Award Date: Feb. 24, 1971

Completion Date: Feb. 1972

Project Cost: $84,180.00

Federal Cost: $84,180.00

DESCRIPTION OF PROJECT

The project incorporates the design, development, fabrication, demonstration and evaluation of an automatic water monitoring device which will provide an immediate warning signal in response to the presence of organophosphates in watercourses. Organophosphates are inhibitors of the enzyme cholinesterase which will be used as sensor to monitor the water being sampled. Water suspected of containing organophosphates and a substrate will be passed over the enzyme in an electrochemical cell. In the absence of the organophosphates the substrate will hydrolyze and produce a low potential. When the toxic material is present the substrate will not be hydrolyzed and a high potential will activate an alarm system.

FWQA Project Officer:

Dr. Tom Hoover
Athens Water Quality Laboratory, NERC-Corvallis
Athens, Georgia

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15090 HGP (Contract 68-01-0100)

TITLE OF PROJECT: "Control of Hazardous Chemical Spills by Physical Barriers"

CONTRACTOR:

MSA Research Corporation
Evans City, Pennsylvania
16033

PROJECT DIRECTOR

Mr. Ralph Hiltz
Senior Scientist
MSA Research Corporation
Evans City, Pa. 16033

Project Site: Evans City, Pa.

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 29, 1971

Completion Date: July 31, 1972

Project Cost: $160,688.00

Federal Cost: $160,688.00

DESCRIPTION OF PROJECT

The purpose of this project is to develop and demonstrate methods to confine spills of hazardous materials on land by use of polyurethane compounds, and low and high expansion foamed inorganics. Selected potential high hazardous materials, including ammonia, chlorine, acrylonitrile, acetonecyanhydrin, methyl alcohol, phenol, lindane and an organic mercury solution, will be used to determine an appropriate compatable foam, structurally stable for creating foam dikes. The methods are to result in a portable high capacity foaming device which can be deployed immediately following a spill, handled, for example, as a back-pack and installed and carried on transporting vehicle.

PROJECT OFFICER

Mr. Ira Wilder, Chief
Hazardous Material Spills Research Branch
Edison Water Quality Research Laboratory, NERC
EPA
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1509 HGO **(Contract 68-01-0124)**

TITLE OF PROJECT: "Development and Demonstration of Mass Transfer Media for Treatment of Acute Spills of Hazardous Polluting Substances"

CONTRACTOR:

Pacific Northwest Laboratories
Battelle Memorial Institute
P. O. Box 999
Richland, Washington 99352

Project Site: Richland, Washington

PROJECT DIRECTOR

A. J. Shuckrow, Research Associate
Pacific Northwest Laboratories
Battelle Memorial Institute
P. O. Box 999
Richland, Washington 99352

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 29, 1971

Completion Date: August 15, 1972

Project Cost: $112,690

Federal Cost: $112,690

DESCRIPTION OF PROJECT

The goal of this project is to select, test, demonstrate, and evaluate the production, subsurface application and surface collection of floatable mass transfer media for in situ treatment of spills in watercourses. Exchange resins and physical sorption media will be utilized to treat spills of toxic bases, acids, and organic compounds. Media will be selected that can be made floatable with a controlled rate of rise to insure optimum contact time with the contaminated watercourse. Methods will be developed to effectively deposit the media at the bottom of the watercourse under spill conditions and subsequently collect the spent media.

Project Officer: Mr. Ira Wilder, Chief
Hazardous Material Research Branch
Edison Water Quality Research Laboratory
NERC
Environmental Protection Agency
Edison, New Jersey 08817

Reproduced from best available copy.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1509 HGR **(Contract 68-01-0098)**

TITLE OF PROJECT: "Disposal Techniques for Spilled and Unused Pesticides"

CONTRACTOR:

Midwest Research Institute
425 Volker Boulevard
Kansas City, Missouri 64110

Project Site: Kansas City, Missouri

PROJECT DIRECTOR

Dr. E. W. Lawless, Principle **Chemist**
Process Chemistry Section
Midwest Research Institute
425 Volker Boulevard
Kansas City, Missouri 64110

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 29, 1971

Completion Date: April 30, 1973

Project Cost: $66,080

Federal Cost: $66,080

DESCRIPTION OF PROJECT

The purpose of this project is to develop and compile information describing safe and non-polluting methods for treating spilled and unused portions of pesticides or other agricultural chemicals in terms understandable by, and with equipment available to informed laymen, county agents and public health officials. Information to be gathered and/or developed includes the toxicity and hazards of the materials, detoxification by conversion to innocuous portions, treating of spills in general and on a layman's property, and proper decontamination of pesticide containers and equipment. The effort will result in the preparation of a manual which could be furnished to appropriate officials for distribution of information on specific pesticides.

Project Officer:
Dr. John Brugger, **Physical Scientist**
Hazardous Material **Spills Research Branch**
Edison Water Quality Research Laboratory, **NERC**
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15090 HGS (Contract 68-01-0123)

TITLE OF PROJECT: Development of Thin Film Aerator/Reactor and Magnetic Separation Device to Treat Spilled Hazardous Materials

CONTRACTOR:	**PROJECT DIRECTOR**
Industrial Bio-Test Labs., Inc. 1810 Frontage Road Northbrook, Illinois 60062	Dr. Robert G. Sanders

Project Site: Northbrook, Illinois

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 29, 1971	**Project Cost:** $138,916
Completion Date: Sept. 29, 1972	**Federal Cost:** $138,916

DESCRIPTION OF PROJECT

The purpose of this project is to develop and evaluate two devices to treat spilled hazardous materials. The first device is a continuous flow through thin film aerator/reactor to which chemicals can be added to neutralize, oxidize, precipitate or adsorb the spilled hazardous materials. The second device is a magnetic separator that removes precipitates, adsorbed gasses, carbon slurries, and other solids from the effluent of the first device by entrapping them in a magnetic iron oxide floc and thus effecting a quantitative separation from the fluid. The effectiveness of the devices will be evaluated by determining the removability of high priority hazardous materials from water.

PROJECT OFFICER
Mr. Ira Wilder, Chief
Hazardous Material Spills Research Branch
Edison Water Quality Research Laboratory, NERC
EPA
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15090 HGT **(Contract 68-01-0110)**

TITLE OF PROJECT: "Development of Methods to Treat, Control and Monitor Spills of Selected Hazardous Materials"

CONTRACTOR:	**PROJECT DIRECTOR**
Cornell Aeronautical Lab., Inc. 4455 Genesee Street Buffalo, New York 14221	Dr. Robert C. Ziegler Cornell Aeronautical Lab., Inc. 4455 Genesee Street Buffalo, New York 14221

Project Site: Buffalo, New York

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 29, 1971	**Project Cost:**	$494,424
Completion Date:	November 30, 1972	**Federal Cost:**	$494,424

DESCRIPTION OF PROJECT

This is a comprehensive project to develop new and effective methods to prevent selected spilled hazardous materials from reaching watercourses and to treat, control and monitor the materials in the watercourses. Materials to be investigated include anhydrous ammonia, phenol, chlorine, acrylonitrile, acetone cyanhydrin, methyl alcohol and heavy metals. The development of appropriate countermeasures will include consideration of use of neutralization, precipitation and adsorption agents; methods for introducing treatment materials; methods to detect and monitor spilled materials; development of appropriate flotation, containment and skimming methods; bioassay determinations of effects of countermeasures on the aquatic environment; and an evaluation of the logistics involved, including cost factors, safety, delivery systems, availability and storage requirements.

Project Officer: Dr. Joseph LaFornara, Research Chemist
Edison Water Quality Research Laboratory, NERC
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 15090 HGU (Contract 68-01-0103)

TITLE OF PROJECT: A Physical Barrier to Contain Spilled Hazardous Materials in Watercourses

CONTRACTOR:

Ocean Systems, Incorporated
11440 Issac Newton Industrial
Square North
Reston, Virginia 22070

PROJECT DIRECTOR

Frank A. March
Ocean Systems, Incorporated
11440 Isaac Newton Industrial Square North
Reston, Virginia 22070

Project Site: Reston, Virginia

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 29, 1971

Project Cost: $148,518

Completion Date: February 29, 1972

Federal Cost: $148,518

DESCRIPTION OF PROJECT

This project is to develop and test a physical barrier that can be used to contain spilled hazardous materials in watercourses to prevent dispersion to surrounding waters. Incorporated in the barrier is an air-inflated flotation collar which supports the top of the barrier, and a water-inflated seal which seals the bottom of the barrier to the bottom of the watercourse. Components necessary for deployment will be evaluated to optimize functional and operational procedures under actual field conditions in both a lake and flowing stream. The ability of the barrier to withstand currents up to three knots in a tidal situation will be determined.

Project Officer: Paul Heitzenrater, Chief
Hazardous Material Spill Control Program
Technology Division
Environmental Protection Agency
Washington, D. C. 20460

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1509 HGV **(Contract 68-01-0099)**

TITLE OF PROJECT: "Development of Modular Transportable Prototype System for Treating Spilled Hazardous Materials"

CONTRACTOR:
Ecology Division
Rex Chainbelt, Inc.
P. O. Box 2022
Milwaukee, Wisconsin 53201

Project Site: Milwaukee, Wisconsin

PROJECT DIRECTOR
Mr. Donald G. Mason
Manager, Process Projects
Ecology Division
Rex Chainbelt, Inc.
P. O. Box 2022
Milwaukee, Wisconsin 53201

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 29, 1971

Completion Date: Sept. 30, 1973

Project Cost: $217.341

Federal Cost: $217,341

DESCRIPTION OF PROJECT

To develop and fabricate a modular transportable prototype system for removing and treating spilled hazardous materials in aqueous solutions. Equipment necessary to treat most of the high potential hazardous spill materials will be mounted as modular units on a truck which can be driven to a spill site where treatment can be instituted immediately. Treatment will include neutralization, flocculation, precipitation, filtration and carbon adsorption.

Project Officer: Dr. Joseph Lafornara, Research Chemist
Edison Water Quality Research Laboratory, NERC
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended. (P.L. 91-224)

PROJECT NUMBER: 1509 HGW (Contract 68-01-0106)

TITLE OF PROJECT: "Foamed Plastic Barriers for Stopping Spills of Hazardous Materials from Leaking Containers"

CONTRACTOR:

Rocketdyne Division
North American Rockwell
Corp.
6633 Canoga Avenue
Canoga Park, California 91304

PROJECT DIRECTOR

Dr. B. L. Tuffly
Rocketdyne Division
North American Rockwell Corp.
6633 Canoga Avenue
Canoga Park, California 91304

Project Site: Canoga Park, California

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 29, 1971	**Project Cost:**	$99,072.00
Completion Date:	July 30, 1972	**Federal Cost:**	$99,072.00

DESCRIPTION OF PROJECT

The purpose of the project is to demonstrate the feasibility of a system based on the use of foam plastic barriers to stop spills of hazardous materials from damaged, leaking containers on land and under water. Various types of currently available plastic foams will be tested and evaluated in the presence of high potential hazard spill materials representative of the major groups of chemicals. The evaluation will include compatibility of foam with hazardous materials, water resistance, bond strength, barrier effectiveness and setting time under simulated spill conditions.

PROJECT OFFICER:

Mr. Ira Wilder, Chief
Hazardous Materials Research Branch
Edison Water Quality Research Division, NERC
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 1509 HOE (Contract 68-01-0113)

TITLE OF PROJECT: "Field Detection and Damage Assessment Handbook"

CONTRACTOR:	**PROJECT DIRECTOR**
Enviro Control, Inc. 1250 Connecticut Avenue,N.W. Washington, D. C. 20036	Dr. D. M. MacArthur Enviro Control, Inc. 1250 Connecticut Avenue, N. W. Washington, D. C. 20036

Project Site: Washington, D. C.

SPECIFIC DATA ABOUT THIS AWARD

Award Date: 6/21/71	**Project Cost:** $56,297.00
Completion Date: 2/8/72	**Federal Cost:** $56,297.00

DESCRIPTION OF PROJECT

This project is designed to produce a handbook of procedures and techniques which are technically and legally defensible for assessing damages to the aquatic environment resulting from discharges of oil and hazardous materials. The handbook will serve as a model for developing State response and contingency planning programs. Standardized observations, testing and reporting will result from State and local programs adopting similar damage assessment techniques.

PROJECT OFFICER

Dr. C. H. Thompson, Chief
Hazardous Material Spills
Division of Oil & Hazardous Materials
Washington, D. C. 20460

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 15090 HUV (R800225)

TITLE OF PROJECT: National Conference on the Control of Hazardous Material Spills

GRANTEE:

University of Houston
3801 Cullen Blvd.
Houston, Texas 77004

PROJECT DIRECTOR:

Dr. H. Nugent Myrick
Associate Professor of Civil Engineering

Project Site: Houston, Texas

SPECIFIC DATA ABOUT THIS AWARD

Award Date: September 20, 1971 **Project Cost:** $27,400

Completion Date: May 31, 1972 **Federal Cost:** $24,839

DESCRIPTION OF PROJECT

This conference is planned to provide an environment for an intensive investigation and study by responsible industrial and governmental officials into the current and state-of-the-art technology in the prevention containment, countermeasure treatment systems, and the environmental restoration and clean-up processes in control and management of hazardous material spills to minimize water quality deterioration of our nation's waterways. New and fresh ideas for research and development programs will be generated and many technical implications of the existing and proposed legislation will be explored. The conference will be held in Houston, Texas, on March 28, 29, 30, 1972, in the Astroworld Complex.

PROJECT OFFICER
Paul Heitzenrater, Chief
Hazardous Materials Spill Control Program
Technology Division
Washington, D. C. 20460

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Research
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: Contract # 68-01-0726 (Program Element 1B2041)

TITLE OF PROJECT: Pollution of Watercourses by Sudden Discharge or Spillage of Thallium and Related Metallic Compounds from Ore Refining and Chemical Processes.

CONTRACTOR:
Cornell Aeronautical Lab., Inc.
4455 Genesse Street
Buffalo, New York 14221

PROJECT DIRECTOR
Dr. Thomas Magorian
Principal Geophysicist

Project Site: Buffalo, New York

SPECIFIC DATA ABOUT THIS AWARD

Award Date: June 21, 1972
Project Cost: $130,504

Completion Date: March 29, 1973
Federal Cost: $130,504

DESCRIPTION OF PROJECT

The purpose of this project is to investigate and document the threat to the water environment due to spillage or sudden discharge by compounds of thallium and certain other related metals, such as cadmium, lead, indium, arsenic, and selenium, that are present in the residues and wastes from a variety of ore refining and chemical operations. This study will determine the magnitude of the threat to water quality posed by discharges and spills during storage and/or disposal of thallium and other wastes in holding tanks, lagoons, cinder banks, landfills, and slag deposits. A program of sampling and analysis will be conducted on the water, sediment, and biota--with special emphasis on the food chain--in watercourses near selected industries.

PROJECT OFFICER
Dr. John Brugger, Physical Scientist
Hazardous Material Spills Research Branch
Edison Water Quality Research Laboratory, NERC
EPA
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5
Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 68-03-0181 (Program Element 1B2041)

TITLE OF PROJECT: "Demonstration of Methods to Physically Remove Spilled Hazardous Materials from Bottoms of Watercourses"

CONTRACTOR:
Industrial Bio Test Laboratories, Inc.
1810 Frontage Road
Northbrook, Illinois

PROJECT DIRECTOR
Dr. Robert Sanders

Project Site: Milwaukee, Wisconsin and Northbrook, Illinois

SPECIFIC DATA ABOUT THIS AWARD

Award Date: March 31, 1972

Completion Date: July 20, 1972

Project Cost:

Federal Cost: $52,679

DESCRIPTION OF PROJECT

This is one of two project (the other, Project No. 68-03-0182, is being carried out by Rex Chainbelt, Inc.) to demonstrate and evaluate methods of removing spilled, insoluble, heavier than water hazardous materials from the bottoms of watercourses. The site for this demonstration and evaluation is a designated 500 ft. section of a creosote-contaminated stream in Milwaukee, Wisconsin, namely the Little Menomonee River. In this demonstration it is essential that the general contour of the stream, as well as the banks, shorelines, and vegetation not be disturbed. This requirement eliminates the more conventional dredging methods. In a continuous operation, creosote, river mud, and detritus will be fluidized with a hand-held vacuum head and pumped to a high rate settling column.

The settled-out creosote and mud will be periodically removed and hauled to a sanitary landfill site. The water, which contains solubilized or dispersed creosote and mud fines, will be pumped through the EPA "Dynactor and Magnetic Separator", developed by Industrial Bio Test Laboratories under separate contract. The treated water will be tested for creosote/mud content and either returned to the stream or cycled for re-treatment. During the demonstration, the water in the Little Menomonee River will be tested above and below the operation site to assure that water quality is not degraded. The superior creosote-removal method (this one or the method being evaluated under Project 68-03-0182) will then be applied to the cleanup of the entire contaminated length (2 1/2 miles) of the Little Menomonee.

EPA PROJECT OFFICER:
Dr. Joseph P. Lafornara, **Research Chemist**
Edison Water Quality Research Laboratory
EPA, NERC
Edison, New Jersey **08817**

Reproduced from best available copy.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 68-03-0182 (Program Element 1B2041)

TITLE OF PROJECT: "Demonstration of Methods to Physically Remove Spilled Hazardous Materials From Bottoms of Watercourses"

CONTRACTOR:

Ecology Division
Rex Chainbelt, Inc.
P. O. Box 2022
Milwaukee, Wisconsin

Project Site: Milwaukee, Wis.

PROJECT DIRECTOR

Dr. Robert Agnew

PROJECT OFFICER
Dr. Joseph P. Lafornara, Research Chemist
Edison Water Quality Research Lab.
EPA, NERC
Edison, New Jersey

SPECIFIC DATA ABOUT THIS AWARD

Award Date: July 31, 1972

Completion Date: March 31, 1973

Project Cost: $83,333

Federal Cost: $83,333

DESCRIPTION OF PROJECT

This is one of two projects (the other, Project No. 68-03-0181, is being carried out by Industrial Bio Test Laboratories, Inc.) to demonstrate and evaluate methods of removing spilled, insoluble, heavier than water hazardous materials from the bottoms of watercourses. The site for this demonstration and evaluation is a designated 500 ft. section of a creosote-contaminated stream in Milwaukee, Wisconsin, namely, the Little Menomonee River. In this demonstration it is essential that the general contour of the stream, as well as the banks, shoreline, and vegetation not be disturbed. This requirement eliminates the more conventional dredging methods. Creosote, river mud, and detritus--as ca. 5% slurry--will be removed continuously from the river bed with a specially designed vacuum head. The head will be manjpulated from a floatation tank-supported frame that permits vertical, lateral, and horizontal movement of the suction head. The frame will be positioned in the river by hand moving. The slurry will be partially separated into solids and water by the EPA Mobile Beach Cleaner. The solids will be transported to a sanitary landfill, while the contaminated liquid will be processed in the EPA Modular Spills Treatment Unit, developed by Rex Chainbelt, Inc. under separate EPA contract. Effluent from the treatment process will be tested for creosote/mud content and then either returned to the river or reprocessed, as required. During the demonstration, the water in the Little Menomonee River will be tested above and below the operation site to assure that water quality is not degraded. The superior creosote-removal method (this one or the method being evaluated under Project 68-03-0181) will then be applied to the cleanup of the entire contaminated length (2 1/2 miles) of the Little Menomonee.

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a contract under Section 5 Federal Water Pollution Control Act, As Amended.

PROJECT NUMBER: 68-03-0201 (Program Element 1B2041)

TITLE OF PROJECT: Documentation of Methods for the Removal of Settled Hazardous Materials in Watercourses

CONTRACTOR:

Citizens for Menomonee River
Restoration, Inc.
1545 S. 108th Street
Milwaukee, Wisconsin 53214

PROJECT DIRECTOR

Edward H. Bryan

Project Site: Milwaukee, Wisconsin

SPECIFIC DATA ABOUT THIS AWARD

Award Date: Oct. 2, 1972

Project Cost: $17,000

Completion Date: Oct. 2, 1973

Federal Cost: $17,000

DESCRIPTION OF PROJECT

A 13 1/2 minute sound, color motion picture documentary film will be produced to show: (1) original state of the creosote-contaminated Little Menomonee River, including footage of volunteers attempting clean-up, (2) operations by two EPA contractors (Rex Chainbelt, Inc. and Industrial Bio-Test Industries, Inc.) in applying EPA-sponsored removal systems to separate 500-feet sections of the River, (3) clean-up operations on the entire 2 1/2 mile contaminated length of the River by an EPA-selected "best" approach for clean-up, and (4) views of the River some time after the full-scale clean-up to indicate the effectiveness of the operation and the accompanying restoration of the River to a creosote-free and environmentally "clean water" condition.

PROJECT OFFICER
Dr. Joseph Lafornara, Research Chemist
Edison Water Quality Research Lab.
EPA, NERC
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a **contract under section 5**
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 68-03-0206 (Program Element 1B2041)

TITLE OF PROJECT: Emergency Collection System for Spilled Hazardous Materials

CONTRACTOR:

MSA Research Corporation
Evans City, Pennsylvania
16033

PROJECT DIRECTOR:

Ralph H. Hiltz

Project Site: Evans City, Pennsylvania

SPECIFIC DATA ABOUT THIS AWARD

Award Date: Nov. 10, 1972

Project Cost: $67,500

Completion Date: Sept. 10, 1973

Federal Cost: $67,500

DESCRIPTION OF PROJECT

A field-operable, liquid pumping system for collecting spilled hazardous materials in a plastic bag will be developed and tested. The system will weigh less than 1000 lbs., be pallet mounted, and occupy a shipping volume no greater than 4 x 4 x 2 ft. The major components are (1) a high efficiency, explosion-proof pumping system, (2) a rechargeable battery pack, (3) two 7000 gal. plastic collection bags, (4) hoses, piping, and valves, and (5) necessary electrical switching components. The system will operate for at least 2 hours at a maximum head of 30 feet.* The bags will be self-deployable, non-rolling on steep hillsides, and chemically resistant to most hazardous liquids. The system will be designed, fabricated, and field tested with subsequent modification, if necessary, to evolve a working prototype.

* The pump will operate at a rate of at least 100 gpm at no head with liquids of viscosity up to 100 cps.

PROJECT OFFICER
John E. Brugger, Physical Scientist
Edison Water Quality Research Lab., NERC
EPA
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 801123 (Program Element 1B2041)

TITLE OF PROJECT: Control of Toxic and Hazardous Material Spills in Municipalities

GRANTEE:	**PROJECT DIRECTOR:**
Allegheny County Sanitary Authority 3300 Preble Avenue Pittsburgh, Pa. 15233	Mr. George A. Brinsko

Project Site: Pittsburgh, Pa.

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 30, 1972	**Project Cost:**	$464,180
Completion Date:	June 30, 1974	**Federal Cost:**	$310,000 (66.7%)

DESCRIPTION OF PROJECT

Summary:

The purpose of this project is to develop a comprehensive program to identify, monitor, manage and control toxic and hazardous material spills in a municipal waste collection-treatment system serving a large metropolitan area. Included in the project are:

1. Identification of character and quantity of actual and potential sources and location of spills of toxic and hazardous materials entering the collection system to evaluate and plan for treatment strategies.
2. Design and installation of a monitoring and surveillance system to verify identification of materials and provide an early warning of spilled toxic materials.
3. Utilization of existing pilot plant to establish modifications to operating techniques to adequately treat toxic materials and protect the biological treatment process.
4. Development of an emergency response contingency plan for controlling hazardous material spills and model ordinances for control of discharges based on treatability studies.

PROJECT OFFICER:

Dr. John Brugger, Physical Scientist
Edison Water Quality Research Laboratory, NERC
Environmental Protection Agency
Edison, New Jersey 08817

INFORMATION SHEET

RESEARCH, DEVELOPMENT OR DEMONSTRATION PROJECT

This sheet describes briefly a grant under Section 5
Federal Water Pollution Control Act, As Amended

PROJECT NUMBER: 801830 (Program Element 1B2041)

TITLE OF PROJECT: Development of Land Spill Decontamination Technique

GRANTEE:

Hancock County Port and
Harbor Commission
P. O. Box 69
Bay St. Louis, Mississippi

PROJECT DIRECTOR:

Dr. Michael Smith, Director
Hancock County Port and Harbor
Commission

Project Site: Hancock County, Mississippi

SPECIFIC DATA ABOUT THIS AWARD

Award Date:	June 30, 1972	**Project Cost:**	$79,988
Completion Date:	February 1973	**Federal Cost:**	$68,500 (85.7%)

DESCRIPTION OF PROJECT

The objectives of this project are: (1) Conduct a short term research program for decontamination of spills of two hazardous materials, phenol and chlordane, at a large captive site (Mississippi Test Facility (MTF), Hancock County, Mississippi) to show the feasibility, practicality and suitability of the site as a testing facility for evaluating spill prevention, control, detoxification, disposal and restoration devices and procedures. (2) Collect and critically evaluate information and data from MTF with respect to existing facilities, potential for modification, if necessary, and general usefulness for demonstrations of prevention, control, containment, detoxification, and ultimate disposal techniques for spills of hazardous materials under fullscale conditions and in a captive area of characterized ecology, climate, geography, and hydrology.

PROJECT OFFICER
Dr. Peter B. Lederman, Director
Edison Water Quality Research Laboratory, NERC
EPA
Edison, New Jersey 08817

ACKNOWLEDGEMENTS

The following people have contributed to the technical and administrative direction of the program.

William J. Lacy
Physical Science Administrator

B.S. In Chemistry from the University of Connecticut and completed course requirements for the PhD. Did post-graduate work at NYU Oak Ridge Institute of Nuclear Studies, U. of Mich., Mich. State. His technical papers and publications number over ninety. Serves on various National and International committees of the AAAS, HPS, AWWA, ACS, AICHE and WPCF, OECD. Listed in "Leaders of Science," "American Men of Science" and "Who's Who in the Southeast." Currently is Chief of Applied Science and Technology of EPA.

He has worked at the Engineer Research and Development Labs, Oak Ridge National Laboratory, Executive Office of the President, (OCD), and Office of the Secretary of Defense.

B.S. Ch. E., Polytechnic Institute of Brooklyn. As Chief, Agricultural and Marine Pollution Control, he is responsible for the technical and administration direction of the program. Prior to joining the Office of Research and Monitoring, he held various positions with the FWQA, was responsible for initiating Navy's shipboard pollution control program and boiler water treatment research program. He also worked in nuclear propulsion field with Martin - Marietta Corp. and Westinghouse Electric Corp.

Kurt Jakobson
Supervisory Sanitary Engineer

Preceding page blank

Paul R. Heitzenrater
Sanitary Engineer

B.S. in Sanitary Engineer, Pennsylvania State University and M.P.H., University of Michigan. Registered Professional Engineer in Pennsylvania. Responsible for development and management of the hazardous material spill pollution control research and development program. Served as Project Officer and Program Committee Chairman of National Conference on Control of Hazardous Material Spills.

Prior experience includes employment with the Commonwealth of Pennsylvania in several positions including: Acting Director, Division of Water Supply and Sewerage; Chief, Sewerage Section and Regional Sanitary Engineer. He was also Director, Division of Environmental Sanitation, Cattaraugus Co. Health Dept. in New York and served in the U. S. Army as Post Sanitary Engineer, Fort Carson, Colorado.

B. S., University of Pittsburgh; B.C.E. and M.C.E., Rensselaer Polytechnic Institute; Ph.D. in Environmental Health Engineering, University of Texas. Registered Professional Engineer, Rhode Island and Texas. Commander, Civil Engineer Corps, United States Navy, Retired. He has responsibility for the recreational and vessel pollution control research program.

During 23 years with the U. S. Navy, he constructed, managed, maintained and operated shore facilities. In his last tour of duty he was responsible for the planning, design and construction of naval facilities in Europe, North Africa and the United Kingdom. He also served as a field engineer with Dravo Corporation and as a research engineer with the University of Texas.

Thomas J. Padden
Sanitary Engineer

☆U.S. GOVERNMENT PRINTING OFFICE:1973 514-153/249 1-3

B.S. in Chemistry, Northwestern University; M.S. in Environmental Engineering, Illinois Institute of Technology. He is responsible for the technical and administrative direction of the agricultural pollution control program. His principal areas of interest are in animal wastes, agricultural land runoff, and irrigation return flows.

Prior experience was as a specialist in agricultural waste with the EPA Chicago Regional Office. Before entering government service his professional work included extensive industrial experience in chemical research, advanced waste treatment research and development, and industrial wastewater consulting.

Will C. LaVeille
Agricultural Engineer

Donald F. Anderson
Agricultural Engineer

B. S. and Master of Engineering in Agricultural Engineering from Cornell University. His area of responsibility is in the technical evaluation and program planning for the Agricultural Sources program. He is a member of the American Society of Agricultural Engineers and the Water Pollution Control Federation.